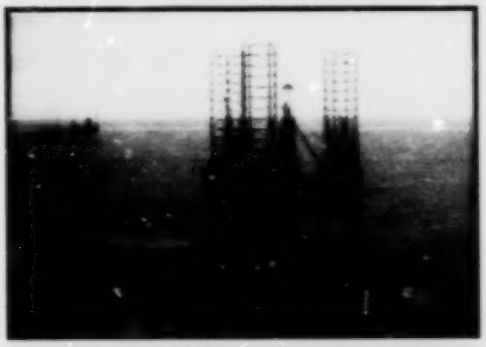
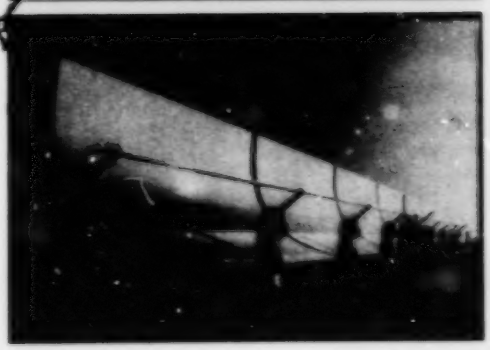
1990 Nova Scotia

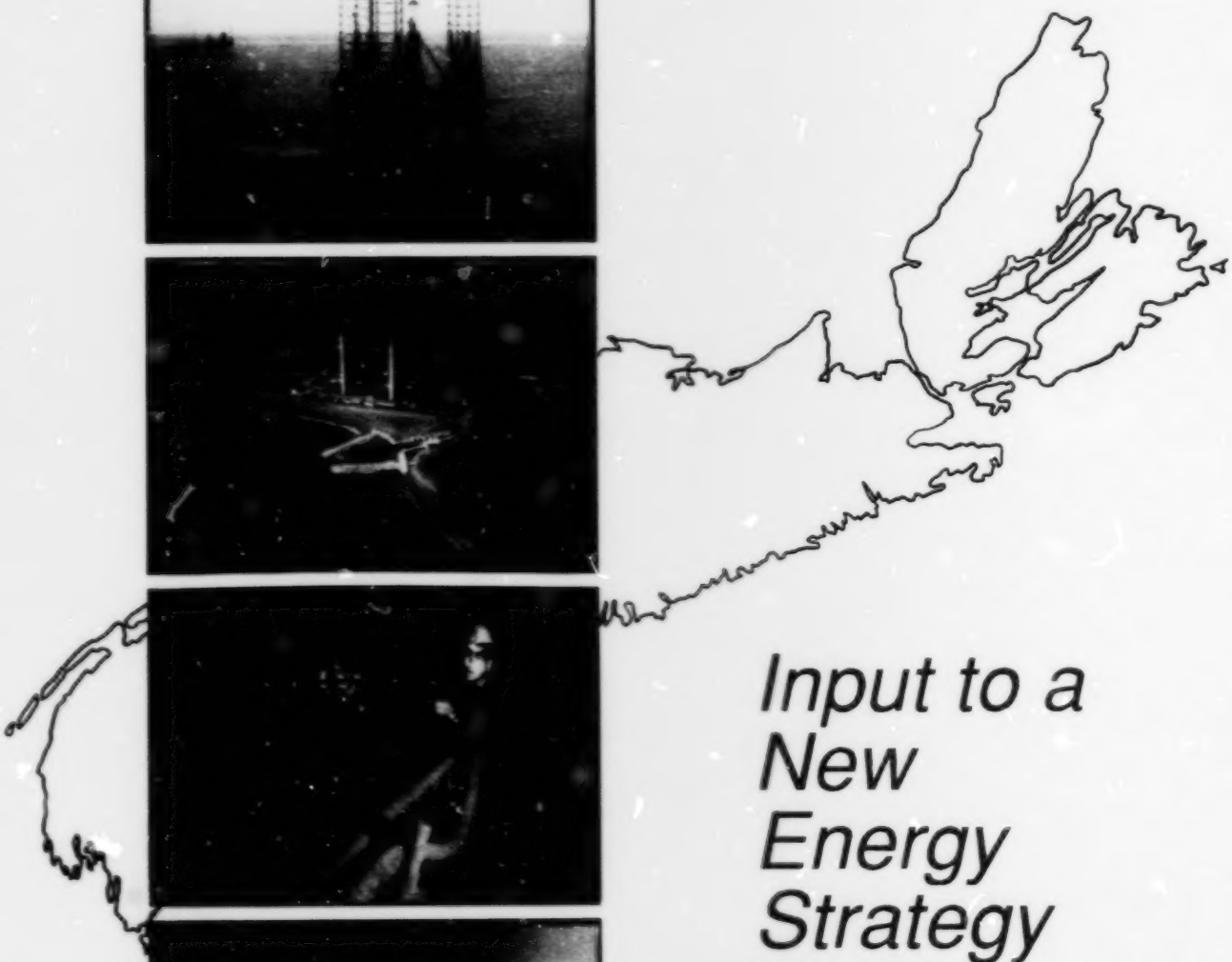
# Energy Strategy Roundtable Report











## *Input to a New Energy Strategy for Nova Scotia*

**Prepared for:**
**Nova Scotia Department of Mines and Energy**

**Prepared by:**
**CEF Consultants**

**December, 1990**

## AN INTRODUCTION FROM THE ROUNDTABLE CHAIR

Few tasks are as important as the development of a strategy for the intelligent use and selection of energy sources. In Nova Scotia, this strategy will impact significantly on the quality of life as well as on the advancement of the economy. In addition, the exploitation of energy sources will offer opportunities for the development of new technology which may, in turn, lead to the export of goods and services.

I am therefore delighted to have been a part of this Energy Strategy Roundtable. I believe the report on the Roundtable fairly reflects the discussion that took place. The openness of the process speaks volumes about the desire of the Nova Scotia Department of Mines and Energy to benefit from the input of such a wide cross section of knowledgeable people from our community.

The report's recommendations do not point to immediate solutions. Rather the Roundtable participants were very much aware of the realities of the process of change. Thus the recommendations indicate modifications in direction, rather than specific end points.

Finally, it is perhaps too rare an event that brings together people on all sides of the energy picture, in a way that has resulted in a fairly broad consensus on many of the major issues. I believe that the public has been well served by this process and I look forward to seeing the implementation of many of the recommendations of this report.

Yours sincerely,

Peter F. Adams, P.Eng.
Roundtable Chair

## A NOTE ON CONTENT

This report attempts to accurately reflect the Roundtable proceedings. To the extent possible, the report presents consensus views, but also acknowledges *minority* or *dissenting* views.

It is based on the discussions of people who were not necessarily technical experts but who had a wide range of interests in energy policy. In some cases, participants may have provided or used information that is not entirely technically or factually correct. Therefore, the reader should note that all claims made in this report may not be accurate.

The reader may also notice some inconsistency between various sections of the report. This partially reflects the separation of discussions into distinct workshop topics as well as some actual inconsistencies between recommendations of the participants. Some recommendations may represent a majority opinion in one workshop rather than consensus of all participants.

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# 1 INTRODUCTION

The NS Department of Mines and Energy sponsored a Roundtable at the Halifax Hilton on November 5th and 6th, 1990 to gather public input into the development of a new energy strategy for Nova Scotia. This report presents the results of the Roundtable.

The report is divided into five sections, beginning with an introduction to the need for review of our energy policy and the consultation process to be followed. Following the introduction, the common threads of discussions that should reflect the broad goals of a new energy policy are summarized. Since the Roundtable was divided into six workshops dealing with different topics, issues specific to these topics are described in the third section. The fourth section of the report places the ideas from the Roundtable into the Canadian and Nova Scotia energy context. Finally, the major recommendations for action are presented.

Three appendices to this report are included. First, summary reports from each workshop are provided along with any written submissions by participants. Participants are asked to review these summaries, as well as the rest of the report, and provide comment on the feedback card included in the back of this report. Second, the consultation process followed for the Roundtable and preparation of this report is described. Third, the list of participants in the Roundtable is provided.

## The Objective of the Roundtable

The NS Department of Mines and Energy is coordinating the development of an updated energy strategy for the province so that Nova Scotians can continue to enjoy stable and secure energy supplies and prices in 2000 and beyond. A crucial component of this process is public consultation, achieved primarily through the Roundtable reported upon here. The purpose of the Roundtable was:

*"to bring together, within a workshop environment, individuals from various stakeholder groups in the province to discuss and provide their opinion on the future direction of provincial energy policy."*

The provincial government last reviewed its energy policy in 1985. The essential themes of the 1985 energy policy were:

- energy demand and supply must be brought into balance;
- secure supplies of energy at stable prices must be confirmed;
- production and use of indigenous resources should be increased to meet demand in provincial and export markets;

One of the issues dealt with in **Energy Plan 1985**, a discussion document, was falling oil prices and supply surpluses.

*"Recent falling oil prices and supply surpluses may lead some to become complacent about our energy future. However, international energy pricing and politics remain volatile and unpredictable. As non-OPEC oil production peaks and begins its inevitable descent, the strategic importance of Middle East oil reserves will resurface."*

The situation has changed markedly from that in 1985 – while most energy used by Nova Scotians costs less today in real terms than in 1984, the concern about volatile oil prices has been borne out by the events of recent months. Largely as a result of lower energy prices and a growing economy, primary energy use in Nova Scotia is now 11 percent higher than in 1984.

How successful were some of the 1985 initiatives? What changes should the government make in our basic energy policies to reflect the public's increasing environmental

awareness? There have also been increasing doubts about the wisdom of developing energy projects to export electricity. These questions, and others, were brought forward for public comment at the Roundtable.

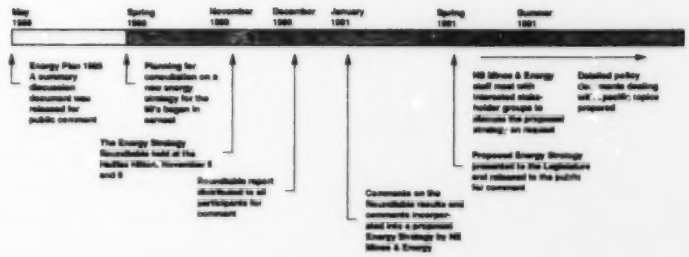
**Where Do We Go From Here?**

The consultation process followed for the Roundtable, leading to preparation of this report, is described in Appendix B. The Roundtable was the first step in the public consultation process that will provide input to development of a new energy strategy by the government of Nova Scotia.

The next step in the process involves the response of the Roundtable participants to this report. All participants and other interested people are asked to submit their comments on the issues presented in this report, or other issues they feel are important to development of a new energy strategy, to the NS Department of Mines and Energy. A reply card is included at the back of this report for your convenience.

Early in January, staff of NS Mines and Energy will be reviewing this report and the comments received. They will then prepare a proposed Energy Strategy for submission to the legislature and the public for review.

People will be asked to comment on this proposed Energy Strategy during the spring and summer of 1991. Staff of NS Mines and Energy will meet with various stakeholder groups on request to discuss their concerns. Also during this period, policy documents will be prepared detailing the steps that will be taken in various areas to implement this strategy. Opportunities for public input will be provided during this policy development phase.



**Public Consultation Process for the New Energy Strategy**

## 2 COMMON THREADS

A number of common threads emerged from discussion of the various workshop topics. These elements included:

- a reduction in the environmental impacts of energy production and consumption;
- a need for much greater conservation and energy efficiency leading to a reduction of overall energy use;
- a preference for use of indigenous energy resources where cost-effective;
- a need for flexibility – keeping the options open;
- adoption of real energy pricing that includes environmental impacts, followed by reliance on the market-place to select options;
- consideration of how social and economic goals should be achieved if increased costs result from the above; and
- a need for improved information, education and communication about energy.

Each of these common topics is discussed in relation to the views expressed within the different workshops, with an emphasis on the points of consensus.

**Environmental Impacts**

There is no question that increased public concern for the environment will need to be reflected in a revised

energy strategy. How best to do this while meeting the social and economic demands of our society is the critical issue.

Environmental concerns were a major issue discussed in almost all workshops. There was general agreement that environmental impacts should be reduced by better controls on emissions and, more importantly, by a reduction in energy demand.

The environmental impacts associated with energy divide into two major parts. First, there are impacts associated with specific energy projects like thermal power plants and offshore oil and gas development. These environmental issues are probably perceived to be the most significant impacts associated with energy. The second type relates to the demand for energy itself. Usually less visible to the public than project-specific impacts, the most significant environmental impact of energy is related to our consumption of energy and the ever increasing need for more of it. It is far easier for people to require more stringent emission controls on a new energy project than it is for them to significantly reduce their own consumption of energy.

All common sources of energy have environmental costs that may be local, provincial, national or global in scope. While better emission controls and better fuel economy for automobiles can result in improvement to the environment, a reduction in driving is likely to be more significant. In a similar fashion, more efficient power generating plants can help preserve the environment, but energy conservation should be able to provide more significant environmental benefits.

The environmental issues become more complex when concern about $CO_2$ emissions is considered. Almost all forms of energy production produce carbon dioxide – whether coal is burned to generate electricity or oil or wood is burned to generate heat. A reduction in the demand for energy is the most important factor in reducing environmental impacts.

The Energy, Environment and Economy workshop stressed the need for an improved definition of environmental goals that take into account the associated social and economic effects. Specific environmental objectives do exist; unfortunately efforts to meet one target do not necessarily meet another target. For example, if the goal is to lessen air pollution, one objective to address concerns about global warming would be to stabilize $CO_2$ emissions at 1990 levels. Another objective aimed at controlling emissions could require the reduction of all $SO_x$ and $NO_x$ emissions to a rate determined not to result in increased acidification of our surface waters. These types of objectives are laudable, but we need ones that are based on an integration of energy, the environment and the economy.

### Conservation and Reduction

Energy efficiency and conservation, to reduce overall energy demand, emerged as a key policy priority tied to the reduction of environmental impacts and concerns about increased costs for energy. Moreover, efficiency and conservation must not be seen in isolation from energy policy as a whole; the concept of demand reduction must be central and integrated into all sectors of energy planning. Participants identified benefits from reduced energy use in a wide variety of areas, including a reduction in costs associated with construction of new generating facilities, reduction of environmental impacts, improved security of supply and economic development opportunities.

It was perceived that energy consumers have not regarded even cost-effective efficiency and conservation measures as a priority in recent years. One of the reasons for this has been declining or stable energy prices. Another reason may be lessened concern by the federal government – witness the dismantling of Energy,

Mines and Resources Canada's Energy Conservation Branch – even though efficiency and conservation continued to be pursued at the provincial level. Public confusion and lack of knowledge about energy also reduced the interest in conservation and efficiency.

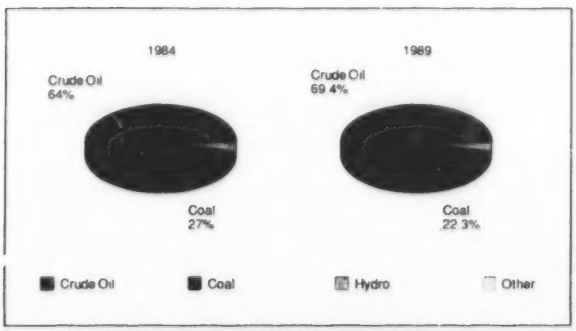
Effective conservation and efficiency policies must be more central in a new energy strategy for Nova Scotia. Policy must focus on the need to use energy more efficiently, leading to a reduction in overall demand for energy.

The range of options suggested for possible action was wide. Repeated suggestions included the necessity for real cost energy pricing, effective public education, the integration of efficiency concerns into the land use planning process, and the use of legislation to set efficiency targets in sectors such as transportation. As well, research priorities should include improving the efficiency of both energy production and end use. And, if the province wishes to welcome energy-intensive industries, it should require that they also be energy-efficient.

Achieving the more efficient use of energy is a broad policy goal that addresses both economic and environmental objectives. It should be central to the development of a new provincial energy strategy.

### Indigenous Energy Sources

Affordable and secure energy supply is obviously desirable, and the use of indigenous energy resources is frequently seen as providing greater control over costs and supply. The use of local resources to supply energy also helps keep money in the province. There is also a possibility of energy supply shortages or rapid escalations in costs if Nova Scotia is too dependent on foreign supplies of energy at times of crisis.




Primary Energy Demand – 1984 and 1989

Local coal is currently the major source of supply for the generation of electricity in Nova Scotia. However, it must be kept in mind that electricity only accounts for about 18 percent of our total energy consumption. The province must also examine ways to produce other forms of energy from coal, as well as considering other alternative sources of energy like wind, solar, and wood that are not dependent on foreign supply.

Coal is available within Nova Scotia in sufficient quantities to ensure reliable supply for a long time, but oil and gas are also indigenous energy resources that may play an increasingly important role in the future. There is no question that oil offers advantages in terms of convenience and is currently the largest source of our energy supply. However, a policy supporting increased use of coal or oil must also balance policies supporting a healthy environment and, to some extent, the use of renewable resources.

Wood is also an indigenous energy resource that is currently underutilized in Nova Scotia. Most of the same arguments for increasing our use of coal or oil and gas also apply to wood, but this resource is renewable as well.

### Flexibility – Keeping the Options Open

While the Roundtable focused on issues related to the development of a new ten year plan, there was agreement that this short time frame does not provide sufficient room for creative changes to be considered. In the longer term, no single energy resource will be a solution to our

energy requirements – each resource has a role to play as part of an overall energy strategy. Some participants in the Roundtable put flexibility as their top policy priority because they felt it is the only way to provide security in a changing world.

It is difficult to predict how technological changes may affect the economic or environmental suitability of different energy resources in the future. We should also keep our options open in relation to the distribution of energy within the province. For example, the Energy, Environment and Economy workshop questioned the long term value of centralized generation and distribution of electric power. While centralized generation and distribution is largely taken for granted, new decentralized energy systems may turn out to be the least-cost alternatives in the future.

In the short term, more emphasis needs to be placed on alternative energy resources, like passive solar energy, non-traditional forms of energy from wood, and geothermal heating in specific areas, to ensure as much flexibility as possible. This emphasis on alternative energy resources does not exclude continued reliance on indigenous coal as a major source of energy in the province, particularly in relation to development of alternative means of using coal. In the longer term, the Coal, Electricity, and Alternative Energy Resources workshops identified tidal or nuclear power as potentially realistic options, in addition to those mentioned above, once environmental and safety concerns are adequately addressed.

**Real Energy Pricing and Who Pays?**

As energy prices rise, for example in response to higher costs of foreign oil, public pressure to have energy costs subsidized will likely increase But, there was consensus that pricing of energy must be based on energy's real costs; in particular, a way must be found to identify and include environmental costs in energy pricing. Such real costs must also be comparable between alternative sources of supply. Increased costs for energy would also provide the only real incentive for conservation and reduction.

Social issues, like the ability of low-income Nova Scotians to pay for basic energy needs, are extremely important but must be addressed by the appropriate government agencies (preferably a single agency or department) and should not distort the true costs and benefits of alternatives. There was consensus that utilities like the Nova Scotia Power Corporation should not have a social or economic development mandate, but instead should concentrate on the production of least-cost, environmentally acceptable power.

If alternative energy resources are to play a more important role, something must be done to shorten their payback period. Full cost accounting for all forms of energy may increase the viability of some alternative energy projects by making them more cost-effective. Direct subsidy of alternative energy developments should be avoided but tax incentives may be required where past capital investments keep some industries from switching to the use of alternative energy resources.

As long as energy supply is based on imported non-renewable resources like oil, we can expect energy costs to increase in the long term as supplies diminish. But in the short term, experience has shown that prices can be highly variable. While most participants agreed that energy costs should reflect all the costs, including environmental ones, there was little attention paid to the role of government in controlling short term price fluctuations. One assumes, if there was more flexibility in our energy supplies, we would be better able to cope with the global fluctuations in costs.

**Information and Communication**

There was consensus that public education about energy needs to be

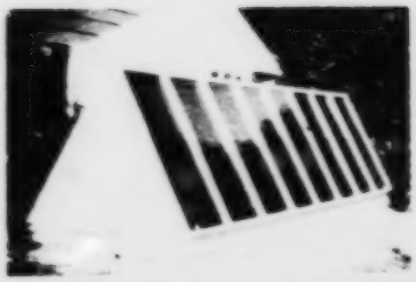
improved. All Nova Scotians, including the public, businesses and other government departments, must be better informed if the recommendations of this Roundtable are to be implemented.

Effective public education programming is critical. Public understanding of the energy field is poor. For example, how many people know that electricity only accounts for 18 percent of end user energy demand in Nova Scotia? Even Roundtable participants (all of whom had a certain expertise and interest in energy concerns) identified gaps in their basic knowledge, especially in such subjects as oil and gasoline pricing mechanisms. As one facilitator noted, *"If my workshop, with all those high-level people in it, isn't sure how the system works, what hope is there for John Doe?"*

Participants viewed education as one of the most important tools available to government to achieve its energy policy objectives. To implement suggestions like real energy pricing and demand reduction, an informed public is needed to support changes in consumption patterns.

It should be noted that public information falls into a number of different categories. One broad stream is "how-to", such as pamphlets, videos and handbooks on efficiency and conservation techniques. Another is the use of legislation and regulation to set standards; for instance, changes to building codes and the setting of emission targets. Yet another is leadership by example, ranging from the setting of high performance standards for government buildings, to making tough and very public choices about what kinds of industry to encourage or subsidize. The use of the schools provides a fourth way; energy information should be in the curriculum for secondary level students. Essentially, all of these are marketing mechanisms for government to encourage citizens to adopt certain behaviours that are considered desirable. Participants identified these examples, and many other options, for improving public knowledge about energy.

A fifth form of communication, however, is somewhat different from these and deals with the dissemination of information on proposed development projects and large government or crown corporation initiatives. The Oil and Gas workshop, in particular, noted a sense that citizens are cynical and dissatisfied with the way such material tends to be presented. Participants felt that it should be objective information, not position statements.



## 3 MORE SPECIFIC IDEAS

This section describes ideas that were dealt with in more detail in the specific workshops. The common threads already described will also be considered where some issues were only relevant to a particular topic.

The following discussion is in alphabetical order of workshop topic.

### Alternative Energy Resources

A key issue for this workshop was to determine what the roles of renewable versus non-renewable energy sources should be over the next decade and the longer term. More attention needs to be paid to renewable resources like solar, wood and biomass, and geothermal energy. Passive solar and forest biomass are the most likely to play an increased role in Nova Scotia in the next decade, though geothermal energy also has a good potential in some areas.

Of non-renewable energy sources that are not currently used in Nova Scotia, the majority in the workshop viewed nuclear energy as the only realistic option for the province. [The alternative energy resources workshop did not discuss natural gas, but the potential for use of natural gas is described in the oil and gas section.]

While there was no consensus on an immediate move towards nuclear power, the environmental acceptability of nuclear power appears to be improving as concern about $CO_2$ emissions increases. The group decided that Nova Scotia should keep abreast of developments in nuclear technology, for possible adoption in the long term if concerns about safety, environmental impacts, and waste disposal are successfully addressed. However, nuclear is not a potential energy source that could be in place within the next ten years.

The group also examined the possible reasons for the lack of movement towards more alternative energy resources in Nova Scotia. As energy prices rise again, alternatives to traditional resources will gain support. However, the payback period for use of alternatives is generally so long that it is not attractive to the average consumer. To be attractive, a switch to alternative forms of energy must be able to compete with other forms of investment.

Real energy pricing would likely provide the required incentive to get people to switch to alternative energy supplies, by improving their cost-effectiveness when measured against traditional sources. The group felt that alternatives were generally more environmentally friendly and that, if energy prices accurately reflected environmental costs, the payback for use of alternatives would be sufficiently attractive. Tax incentives may be required to induce people that have already made an investment based on traditional energy resources to switch to alternatives.

## Coal

A primary theme of this workshop was that coal should continue to be the "fuel of choice" for the generation of Nova Scotian electricity; it is indigenous, secure, plentiful, relatively cheap, and offers local economic benefits. However, it was seen as imperative that coal must be developed and used in a way that is compatible with a clean environment.

The need to establish practical, achievable targets for emission control and reduction that are also scientifically and politically acceptable was highlighted. It was emphasized that, in the absence of a practical absorbent for $CO_2$, lowered $CO_2$ emissions must come through reducing the usage of fossil fuels; this can be accomplished by demand reduction and improvements in combustion efficiency.

Each aspect of the coal extraction and utilization process must be critically examined with a view to achieving the most efficient use of the resource. The province should only expand electrical generation capacity after taking maximum conservation, efficiency, and demand side management measures. Direct payment by end-users for emission control measures would encourage conservation practices.

The federal government has proposed a target of stabilizing $CO_2$ emissions at 1990 levels by 2000. However, because uncertainty exists about precisely how to achieve emission reductions, at this point it is impossible to guarantee the meeting of a target at a specific time. The province should agree with the federal government to aim for a general goal, without a specific timetable, and in concert with the nature and timing of emission reduction measures in other nations. However, the province must also discover means that are practical for emission reduction within Nova Scotia and then set a definite target with a deadline. The scientific community must intensify its efforts in emission control, taking into account the political pressures involved.

The workshop also noted that the circulating fluidized bed process appears to be capable of achieving required reductions in $SO_x$.

Equivalent standards for federal and provincial emission regulations are needed. The principle of equivalency would ensure that Nova Scotia's

standards met Nova Scotia's global obligations. Once federal-provincial agreement on a standard is reached, the province should be responsible for implementing the regulations. Having both federal and provincial standards is awkward and costly.

Participants also recommended that the Public Utilities Board should retain its power to deal with the supply and pricing aspects of electricity; the workshop acknowledged the dilemma that the government and the PUB face of protecting the consumer from undue cost, while at the same time ensuring that more funds are available for emission control.

The aim of research must be to use coal more efficiently, with high regard for environmental protection; priorities fall into three general areas:

- emission control;
- safety and economics of coal extraction;
- improving efficiency of power generation

The NS Department of Mines and Energy should focus on what is specifically required in Nova Scotia, and maintain an up-to-date set of research priorities, irrespective of how they will be financed and who will conduct them. It was agreed that all producers of coal and end users of electricity should share research costs in an equitable manner.

In sum, Nova Scotia must ensure that its coal is used and sold in the cleanest possible form.

### Electricity/Private Power

The issue of how to regulate the supply and price of electricity in Nova Scotia has three aspects: policy, supply (including the regulation of new facilities), and pricing, or rate structure. Policy directions must be set by the provincial government and, where appropriate, implemented through legislation.

The approval of new facilities, and decisions about pricing and rate structures with regard to electricity should remain under the jurisdiction of the Public Utilities Board. Cabinet should not be able to overturn specific decisions, and appeals should lie only to the courts on points of law. Changes to legislation should be generic, and not focus on individual plants or applications.

The *Public Utilities Act* should be amended to make it easier for citizen groups and small power producers to participate in Public Utilities Board hearings, and the government should consider the provision of intervenor funding.

A majority of the group stressed that all options for electrical generation should remain open, including tidal and nuclear; however, this did not mean that the government should "plough ahead" with nuclear at this time. Rather, options should not be eliminated by legislation, but should remain open for evaluation against fair, consistent criteria.

The workshop also recommended that the Nova Scotia Power Corporation should not have an economic development mandate. As well, the Corporation should not be in the business of developing dedicated facilities for power export at this time, due to concerns over environmental impacts and the use of non-renewable resources.

Demand side management (DSM) falls into two categories; energy conservation and efficiency, and re-timing energy use. Although DSM is a desirable concept, more research is needed on what precisely the consumer, utility, and societal benefits are. Consumers will participate in DSM if it is in their financial interest; possibly the Nova Scotia Power Corporation could supply needed products on a term payment program through the regular power bills. As well, more public education is needed.

Overall, the emphasis was that power rates should reflect the true costs of producing power. Social and public

policy considerations (for example, affordability of power by the poor or aged) should be dealt with through government policy action outside the rate structure.

### Energy Efficiency and Conservation

There is no alternative to conservation and energy efficiency if resources are to be used wisely and environmental concerns addressed. Unfortunately, despite our heavy reliance on imported oil and indigenous fossil fuels, Nova Scotia lags behind several other provinces in implementing efficiency and conservation technologies. Barriers to their adoption have included attitudes, lifestyles, inadequate information and education, lack of regulatory requirements, and relatively low energy prices.

The workshop brainstormed a lengthy list of suggestions; the recommendations were broken into residential, commercial/institutional, transportation and industrial categories.

Real cost energy pricing, and costs that reflect consumption rates would be the most powerful incentives for conservation. For example, in domestic use, a standard household consumption of fuel and electricity could be identified. Households using more than the standard would be charged a higher rate for the excess amount. On the other hand, government grants and direct financial incentives were not viewed as particularly useful. However, the possibility of carefully monitored, low (or no) interest loans to promote the sale of energy-efficient products was discussed, and there was some interest in tax incentives.

Effective public education about the potential savings, environmental benefits, and techniques of efficiency was identified as a high priority for all sectors. In particular, contractors, owner-builders, building inspection personnel and occupants need to be better informed.

The workshop also emphasized the need for regulatory reform in the construction sector, including the development of energy-efficient building codes and site planning requirements. As well, other priorities for the construction sector included:

- the retrofitting of older structures;
- the necessity for government to set an example in building energy-efficient structures;
- the recognition and promotion of qualified and competent builders;
- the development and implementation of life-cycle cost analysis of buildings.

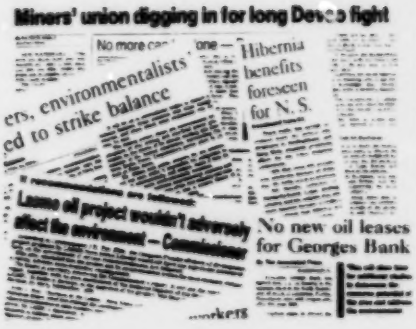
As well, the awarding of government contracts should be significantly influenced by the energy performance of the proposed structure.

Government should take the lead role in promoting efficiency of energy usage in both the home and workplace; suggestions included:

- legislation to enforce energy efficiency standards for appliances and heating, cooling, and ventilation systems;
- cogeneration;
- recycling;
- the encouragement of more efficient industrial processes.

The transportation discussion emphasized:

- construction of transit collector systems ("park and ride" systems in which commuter parking and mass transit into town centres is provided);
- road planning with energy consumption in mind
- the implementation of a fuel tax whose proceeds would be used to support mass transit;
- zero tolerance enforcement of speed limits;
- motor vehicle inspections that include an emission control check;
- a requirement for the advertising of fuel economy ratings for all vehicles.


Miners' union digging in for long Devco fight

No more can... one — Hibernia benefits foreseen for N.S.

...es, environmentalists ...ed to strike balance

Lease oil project wouldn't adversely affect the environment – Commissioner

No new oil leases for Georges Bank

...workers

The workshop did not find any one solution to achieving greater efficiency and demand reduction. Instead, as one participant stated, "The big fix is a bunch of little fixes".

### Energy, Environment and Economy Linkages

This group attempted to address the most complex topic of all; how can environmentally sensitive energy policy be implemented while continuing to meet economic and social goals? While acknowledging the complexity of the issue, the workshop agreed that the need for a more environmentally sensitive energy policy should not be questioned.

Although there were different shades of opinion on what the emphasis should be in economic development policy, most proposed goals centered around keeping people at work. There was a general consensus that the single development goal of increasing economic growth was, by itself, inadequate for today's world. It was noted that increased energy costs have the potential for reducing Nova Scotian industries' competitiveness, but there is also a potential for increased jobs if we can develop an export trade in environmentally sensitive alternatives.

Social issues relate to the affordability of energy by less affluent people. We must ensure that the basic needs of all Nova Scotians are met while striving for energy pricing that places all energy resources on a level playing field. Adoption of real energy pricing will require co-ordination between NS Department of Mines and Energy and other departments responsible for social programs, to ensure that social goals are maintained. As well, there was consensus that better analytical tools for incorporating the full costs of energy and displaying subsidies are urgently needed.

There was debate about the best way to reach an environmentally sensitive energy system. The discussion centered around whether people can be convinced to change their consumption patterns *en masse* and embrace energy reduction, or whether we must concentrate on selecting the least environmentally damaging alternative to supply an ever increasing energy demand. Demand reduction appears the essential choice in the long run but we may need to work on a blend of the two approaches as a beginning.

The need for developing stringent economic and environmental criteria for energy policy and developments was stressed.

If an emphasis is placed on demand reduction, some participants found it difficult to see how we can, at the same time, consider development of power export projects. While most participants in this workshop felt that export projects should be evaluated by the same stringent criteria as domestic ones, there was some strong dissension. There was no question, however, that we must know the real costs, including all the external costs, before accepting an energy for export policy.

### Oil and Gas

Oil and gas are the sources of energy to which all other forms of energy are compared in terms of convenience, energy density, versatility and cost. Oil is also the major source of energy used in the province, supplying 69.4 percent of the primary energy supply (this percentage includes oil used to generate electricity).

The importance of oil in Nova Scotia and the currently rising prices suggested two priority initiatives to participants. First, we must again move to reduce our dependence on foreign oil in the long term; and second, we must ensure that we have a reliable source of supply over the short term.

The workshop recommended that one way to reduce our dependence on foreign oil would be to develop our own oil and gas resources. Develop-

ment of offshore resources should be encouraged, with the exception of highly sensitive areas like Georges Bank, in preference to building a pipeline to bring Western gas east. Onshore exploration should also be encouraged, and pressure should be exerted on companies holding promising leases to develop them. However, the current moratorium on drilling on Georges Bank should be maintained while other resources remain to be developed, and until exploration there is vital to national need and security.

To help ensure an adequate supply of oil is maintained, the province should work with the federal government and other Atlantic provinces to implement a tactical petroleum reserve for Atlantic Canada.

As the price of oil rises, an increased demand for price regulation can be expected. On the one hand government regulation can lead to lower consumer prices. On the other, too much regulation can limit competition and lead to higher prices. The group did conclude that a regulation requiring the road-side posting of gas prices would help the consumer.

The workshop stressed the importance of better informing the public about Nova Scotian oil and gas, both off and onshore. Participants were concerned that the public does not tend to trust government information, viewing it as biased, and suggested that government, industry, and non-governmental organizations should work together to disseminate objective information on the resource. It was also felt that the public needed early knowledge and involvement in development processes.

## 4 HOW DO THESE IDEAS FIT INTO THE BROADER PICTURE?

This section reviews some recent events that have affected the global and Canadian energy markets and then summarizes the current energy situation in Nova Scotia. Most of the information in this section relies on the presentations at the Opening Plenary by Dr. Gerry Angevine, president of the Canadian Energy Research Institute in Calgary and Dr. Jim McNiven, Dean of the Faculty of Management at Dalhousie University.

### The World Energy Picture

A few major events are most likely to influence world supply and demand for energy over the next decade. These include:

- swings in the price of crude oil; and
- the Brundtland Commission's report (1987);

International events affecting the price of oil have always had profound repercussions on the general rate of inflation, economic growth rates, and the markets for related energy commodities. The recent emphasis on sustainable development originating with the Brundtland Commission is also expected to influence energy policy around the globe.

A number of events closer to home have also influenced energy in Canada:

- energy policy in the United States;
- the National Energy Program (1980);
- natural gas and crude oil market decontrol;
- the Canada/U.S. Free Trade Agreement (1988); and
- energy megaprojects like Hibernia.

The philosophy underlying U.S. energy policy throughout the past decade has

been to minimize government intervention in energy markets. The low world oil prices during the second half of the 1980s resulted in an increase in consumption and now the U.S. is dependent on foreign sources of crude oil for about half of its requirements.

The philosophy behind energy policy in Canada has changed since 1984. The federal government has signalled that it too believes decisions are best left to the private sector, as reflected by such federal policy initiatives as the decontrol of natural gas and oil markets; the Free Trade Agreement; the dismantling of the more interventionist elements of the NEP; and by replacement of the Foreign Investment Review Agency by Investment Canada.

### The Canadian Energy Picture

Canada is well endowed with non-renewable energy resources – the nation has large reserves of coal, natural gas and uranium. As a result, Canada is in an enviable energy position compared to many other major industrial countries.

However, supply of crude oil is a concern. The traditional reserves of oil in Western Canada have begun to decline. While Canada is exporting substantial quantities of heavy crude oil into the northern states in the west, we are importing light and medium oil in Quebec and Atlantic Canada. Overall, Canada is about in balance in total crude oil trade, but by the turn of the century Canada may be importing about half of its light crude oil (even with production from Hibernia).

The consumption of oil in relation to other sources of energy is expected to decline as public policy results in some shift in demand to ethanol, natural gas or other alternatives to gasoline. Nonetheless, the total quantity of oil consumed is forecast to increase.

### The Nova Scotia Context

Nova Scotia seems to have difficulty reducing its reliance on oil for the largest proportion of its energy. There has been some shift away from oil in household heating and the Nova Scotia Power Corporation has moved to coal in a major way, but the growing needs of the transportation sector, coupled with the oil price declines of the early 1980s, have restored much of oil's market share.

We are now in a situation similar to that of 1979. If we had not shifted to coal for the generation of electricity and had not emphasized fuel efficiency and insulation, the situation would be much worse today. In addition, Nova Scotians needed 6 percent less energy to produce a unit of economic output in 1989 than in 1984 because of increased importance of the information and service sectors. At least some trends are away from ever increasing demands for energy.

Nova Scotia, like Canada, has a tradition of producing raw materials. We must recognize, however, that resource development is no longer the employment generator it once was. These industries are very capital-intensive, which means that there are few jobs for the vast amount invested. Future employment will likely be based in the service sector, which already employs the majority of Nova Scotians. This sector is least closely tied to resource and energy needs.

Many consider the current environmental awareness to be in conflict with economic development but things are not that simple. Many high-tech firms look for places with a healthy environment, good quality of life, good schools and a progressive community spirit, and these industries are not generally energy intensive. If environmental standards are high, local companies will have to innovate to meet them and will then find themselves competitive in outside markets. In an increasingly environmentally conscious world, the most competitive producer will be the one with the highest product standards. Incorporating a strong environmental ethic in a new energy plan will encourage innovation and enhance our economic competitiveness, not the reverse.

The energy plans of 1979 and 1985 emphasized new sources of energy supply. The 1990s plan should be more realistic, accepting the long lead times necessary for new energy facilities, and stress energy management and conservation. This approach should also stress public education if we are going to begin reducing our demand for energy.

Someone once said that the toughest kind of predictions to make are those about the future. The 1979 Energy Plan predicted that Nova Scotia would need 237 trillion BTUs of energy in 1990. Last year we used 163 trillion. The 1979 prediction over-estimated the energy demand by 45 percent. Now all we have to do is get to a position where our predictions and actual demand are both decreasing.

## 5 RECOMMENDED POLICY OPTIONS AND ACTIONS

In summarizing the recommendations of the Roundtable, this section first outlines the broad themes that should form the core goals of a new energy strategy. These flow out of the common threads identified earlier. More specific policy recommendations are then detailed under the headings of public information and education; incentives for change; regulatory initiatives in the context of land use, environmental, and transportation planning, and building construction; regulation of pricing and costs; and government priorities for research and development. Goals and actions with regard to public process and environmental quality are detailed in separate sections.

Many of the more specific recommendations reflect a consensus reached only within one particular workshop that identified a certain priority for action; these are followed by the name of the workshop that suggested them.

### Overall Recommendations

Energy demand reduction in tandem with greater energy efficiency and conservation should be the central goal and theme of a new Nova Scotia energy strategy.

Environmental concerns must be fully integrated into provincial energy policy.

The increased use of indigenous resources should be encouraged by policies which also emphasize minimizing environmental impacts, the use of renewable resources, and cost-effectiveness.

The pricing of all forms of energy should be based on their real costs, including environmental costs. Social policy considerations of income and equity (for example, the affordability of power by the poor or seniors) should be dealt with through government policy outside the energy rate structure.

All options in the energy field, both of production and distribution, should remain open for consideration at appropriate times in the future; options should be evaluated on a set of fair, consistent criteria which includes an emphasis on environmental concerns.

The need for effective public information and education programmes must be emphasized in the new strategy.

### Recommended Actions

*Public Education and Information*

The NS Department of Mines and Energy must develop effective public education campaigns to encourage demand reduction, and maximize energy efficiency and conservation.

Public education and training programmes in efficiency and conservation techniques should be emphasized for both new construction and renovation of homes and commercial structures. Target markets should include owner-builders, tenants and owners;

continuing education programmes should be designed for professionals, including architects, contractors, and building inspection personnel. Emphasis must be placed on building design technology and operating costs. (Energy Efficiency and Conservation)

In the schools, the provincial government should provide information on the resource base of Nova Scotia, and on energy efficiency and conservation. This information should be targeted at both junior and secondary level school audiences.

Government, citizen groups, and industry should co-operate in the production and dissemination of public information. (Oil and Gas)

*Incentives for Change*

[Despite the overall emphasis on the need for real cost energy pricing, certain financial incentives were identified as potentially desirable by some workshops and are listed below.]

The provincial government should encourage only energy-efficient industries to locate in Nova Scotia.

The provincial government should consider the implementation of a tax incentive program to encourage the use of energy-efficient technologies. (Energy Efficiency and Conservation)

The provincial government should not subsidize industrial energy costs, even for reasons of economic development.

The provincial government should be significantly influenced in its awarding of construction contracts by the energy performance standards of the proposed structure. (Energy Efficiency and Conservation)

The provincial government should consider the use of selected tax incentives to promote the use of, or conversion to alternative energy forms, including encouraging the greater use of the indigenous energy resources of biomass and wood waste. (Alternative Energy Resources)

The Nova Scotia Power Corporation should provide zero or low interest term payment programmes to consumers for demand side management and efficiency products. (Electricity)

The provincial government should develop tax incentives to encourage the purchase of more energy-efficient vehicles. (Energy Efficiency and Conservation)

The provincial government should encourage the use of rail, instead of trucks, to transport most goods over long distances. (Energy Efficiency and Conservation)

*Regulatory Initiatives in Land Use, Environmental, and Transportation Planning*

The provincial government should work with the non-profit housing development sector and the Canada Mortgage and Housing Corporation to ensure that the construction of non-profit, government supported housing plays a lead role in demonstrating maximum energy efficiency. (Energy Efficiency and Conservation)

The provincial government should develop an energy efficiency building code that is written in plain English and is easy to read and understand. The efficiency code should be added to all municipal building codes. (Energy Efficiency and Conservation)

The provincial government should work with municipalities to develop systems of lifetime energy cost and lifetime performance standards for buildings. Such records should be provided to potential purchasers. (Energy Efficiency and Conservation)

The provincial government should work with municipalities to develop land use bylaws for new housing developments that require optimum site planning that maximizes passive solar energy input. (Energy Efficiency and Conservation)

The provincial government should develop explicit, province-wide

environmental goals for such issues as habitat protection, wetlands preservation and maintenance of agricultural land through a joint departmental land use planning process; the NS Department of Mines and Energy should be a participant in, and promote the need for, this process, due to the Department's interest in the question of facility siting. (Energy, Environment and Economy Linkages)

The NS Department of Mines and Energy should promote the need for planning more efficient transportation systems.

Provincial and municipal transportation planning should require collector systems for 'out of town' commuters which provide parking facilities at the urban fringes and efficient mass transit systems into city cores. (Energy Efficiency and Conservation)

The provincial government should require municipal police forces and the RCMP to enforce a zero tolerance speed limit policy. (Energy Efficiency and Conservation)

The provincial government should require an emission control check in motor vehicle inspections. (Energy Efficiency and Conservation)

The provincial government should require the inclusion of fuel economy ratings in vehicle advertising and on the dealer's sticker, as well as the display of standard energy consumption ratings on appliances, furnaces and buildings. (Energy Efficiency and Conservation)

*Regulation of Pricing and Costs*

The approval of new facilities, and decisions about pricing and rate structures with regard to electricity should remain under the jurisdiction of the Public Utilities Board.

The provincial cabinet should not be able to overturn specific decisions of the Public Utilities Board. All appeals of decisions should be to the courts on points of law only. (Electricity)

Changes to the legislation governing the Public Utilities Board should be generic, and not focus on individual plants or applications. (Electricity)

Energy costs should reflect consumption rates. (For example, in domestic use, standard household consumption of fuel and electricity should be determined, and households using more than the standard should be charged a higher rate for the excess amount.) (Energy Efficiency and Conservation)

The provincial government should establish a targetted vehicle fuel tax to be used to support mass transit. (Energy Efficiency and Conservation)

The provincial government should encourage municipalities to increase such items as bridge fares and urban core parking fees, to encourage the use of public transport and car pools. (Energy Efficiency and Conservation)

*Government Research and Development Priorities*

The NS Department of Mines and Energy should develop better analytical tools for incorporating the full costs of energy and displaying subsidies, and increase the availability of the resulting information to the general public. (Energy, Environment and Economy Linkages)

The NS Department of Mines and Energy and the Nova Scotia Power Corporation should work to identify precisely how demand side management will benefit consumers, the utility, and society. (Electricity)

The NS Department of Mines and Energy should focus on what research is specifically required in Nova Scotia, and maintain an up-to-date set of research priorities, irrespective of how they will be financed and who will conduct them. (Coal)

Coal must be developed and used in ways that are compatible with a clean environment. The primary focus of

coal research should be directed towards three general areas:

- emission control including attention to removing sulphur and taking steps to reduce $CO_2$; in particular, the additional cleaning of raw coal to reduce its sulphur content should be further investigated.
- safety and economics of coal extraction; this includes the need for critical attention to the unique features of submarine mining encompassing ventilation systems, methane outbursts and efficient transportation systems
- improving the efficiency of power generation. (Coal)

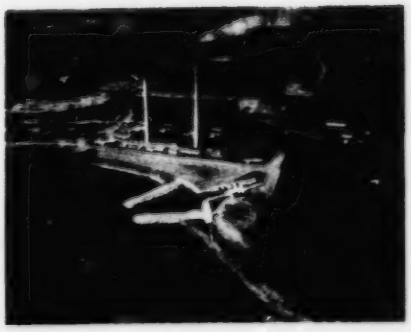
The NS Department of Mines and Energy should establish an Office of Clean Coal Technology. (Coal)

All producers of coal and end users of electricity should share research costs in an equitable manner. (Coal)

The provincial government should encourage coal development over and above Nova Scotia's own needs. (Coal)

The retrofitting of existing thermal generating plants and the use of their waste heat should be studied by the Department and the Nova Scotia Power Corporation, with an eye to making use of the energy that is now discarded during electricity generation. (Coal)

The provincial government should include tidal power in its consideration of long term potential alternative energy sources.



The NS Department of Mines and Energy should keep abreast of developments in nuclear technology, for possible adoption in the long term if concerns about safety, environmental impacts, and waste disposal are successfully addressed.

The provincial government should encourage oil and gas development for export if it is necessary for a project to be viable. (Oil and Gas)

Onshore oil and gas exploration and development should be encouraged by the regular posting of lands and the increased involvement of Nova Scotia Resources Limited in onshore exploration and development. (Oil and Gas)

The provincial government should, subject to existing environmental standards and review procedures, on a project by project basis encourage the exploration and development of offshore oil and gas in all areas, with the exception of Georges Bank. (Oil and Gas)

The provincial government should provide leadership in spearheading the development of Scotian Shelf gas. (Oil and Gas)

The provincial government should ensure early communication of opportunities for all proposed offshore oil and gas development projects. (Oil and Gas)

The provincial government should work with the federal government to implement the tactical petroleum reserve for Atlantic Canada, to be funded by a national surcharge on the consumption of specified petroleum products. (Oil and Gas)

The province and the Nova Scotia Power Corporation should only expand electrical generation capacity after taking maximum conservation, efficiency, and demand side management measures. (Coal)

The Nova Scotia Power Corporation should not have an economic development mandate. (Electricity)

The Nova Scotia Power Corporation should not consider developing dedicated facilities for the export of firm power to markets outside the province unless such a project can be clearly shown to have a net financial and environmental benefit to Nova Scotia.

The existing electrical grid interconnection with New Brunswick should be

put to greater use, and efficient exchanges of power between NS and NB should be encouraged. (Electricity)

*Specific Actions to Ensure Environmental Quality*

The NS Department of Mines and Energy should encourage and participate in the development of explicit environmental goals for the province.

The provincial government should develop practical, achievable targets and deadlines for the reduction of $CO_2$ emissions. (Coal)

The provincial government should work with the federal government to develop an equivalency standard for federal and provincial emission regulations, that would ensure that Nova Scotia's standards met Nova Scotia's global obligations. Once federal-provincial agreement on a standard is reached, the province should be responsible for implementing the regulations. (Coal)

Georges Bank should be protected from exploration and development until oil and gas production there is critical to national need and security. (Oil and Gas)

Any drilling in the province proposed in provincially controlled salt water should be subject to an Environmental Assessment of the same quality as the federal government would conduct in waters under federal or jointly-managed jurisdiction. (Oil and Gas)

*Public Process*

The province should ensure that the public is involved in energy developments beginning with the early stages of the process. (Oil and Gas)

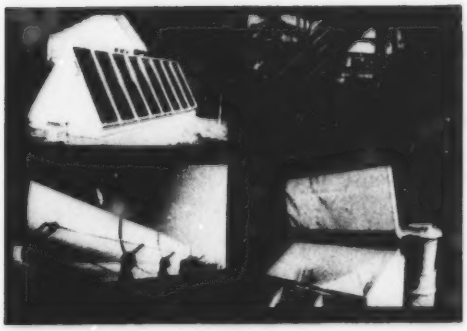
The *Public Utilities Act* needs to be amended to allow better access for citizen groups and small power producers to the Public Utilities Board. The provincial government should consider the establishment of a system of intervenor funding for such groups. (Electricity)

The provincial government should consider holding public meetings to evaluate present regulations on the distribution and pricing of petroleum products. (Oil and Gas)

## 6 APPENDIX A – WORKSHOP SUMMARIES

These summaries are intended to reflect the discussions within each of the workshops. They have been prepared by the facilitator and recorder of the workshops and reviewed by them for accuracy. The summaries of the various workshops differ in style because they were prepared by different people and based on substantially different discussions. Written submissions from any participant are included at the end of each summary.

Participants were asked to set their own agenda for each workshop. In general participants found the background discussion paper provided by the NS Department of Mines and Energy helpful and agreed to discuss the issues and questions proposed in it. Some groups added additional questions and others changed the order of presentation.



## ALTERNATIVE ENERGY RESOURCES

*Professor Charles Miller was facilitator of this workshop. Dr. Miller was an Adjunct Research Professor of Mechanical Engineering at the Technical University of Nova Scotia from 1966-1986. Principal areas of his research have been energy conversion and renewable alternative energy forms.*

*Prof. Miller has written books, articles and papers on alternative energy resources in Nova Scotia and has a keen personal interest in the topic. As well, he has been involved in a number of conferences and committees dealing with alternative energy and a wide range of other issues.*

*Ben Storey was the recorder for this workshop.*

### 1. Workshop Methodology

In the relatively short time available for discussion by the workshop participants (5 sessions, 8 hours total), little time could be devoted to each and every alternative form of energy resource available to Nova Scotia. It was evident that adequate coverage of each topic was impossible; therefore the group concentrated on finding majority viewpoints, with efforts made to generalize conclusions as much as possible, under the circumstances.

It is important to note that the views expressed represent the collective views of the workshop participants and therefore are influenced by the collective backgrounds and outlooks of these participants. This aspect of the exercise is of importance in relation to this particular workshop, due to the controversial nature of some of the alternative energy forms, the conflicts between economics and the environmental issues inherent in **any** alternate energy forms discussion, and the

personal biases of participants, of both majority and minority opinions.

The workshop report which follows below essentially mirrors the chronology of the discussions.

## 2. Discussion on Alternate Energy Sources

The participants generally agreed that the discussion period of concern was primarily the decade from 1990 to 2000, but that applied research should continue beyond the end of this decade.

### *2.1 Renewable Resources*

Within the time available, the group reviewed characteristics of the various renewable resources in terms of (a) base-load energy supply, (b) local (regional) levels, and (c) individual household or small business levels.

There was general agreement that no single alternative energy resource could be a solution to all energy requirements; rather, each resource has a role to play as part of an overall energy strategy, on the basis of each resource's characteristics.

#### Solar Energy and Other Renewable Sources

While all workshop participants recognized that solar energy was responsible for providing conditions that enabled us to live on Earth and that most forms of renewable energy were solar-based, there was considerable difference of opinion on the viability of further use of this form of energy.

- Passive Solar Energy

There was unanimous agreement that passive solar energy methods were mature and that the use of passive solar energy was to be strongly encouraged, especially in domestic situations.

- Active Solar Energy

There was a virtually even opinion split among the participants in respect to the viability of active solar energy methods.

On the positive side, proponents of active systems noted that locally produced solar water heaters are the equal of any produced elsewhere, and a significant export market for these has been established in addition to a healthy local market. Proponents also argued that cost-effectiveness and reliability are comparable to other forms of energy, while being environmentally benign.

Opponents of active solar heating argued that the pay-back period is too long, and that it is not cost-effective to continue with research, design and development in a location outside of a tropical desert. However, active solar in the form of photovoltaics probably has application in remote locations.

This subject obviously requires much more quantitative discussion than was possible at this workshop.

- Wind Energy

The majority view was that high capital costs and variable power generation would make it difficult for wind machines to compete (estimated energy delivery at 15¢ to 20¢ per kW-hr) against lower-priced conventional power sources. Thus existing economic conditions would preclude any general cost advantage for wind turbine generators, and design and development should not be carried out in Nova Scotia.

A small minority disagreed, particularly in relation to coastal locations where wind regimes are more favourable and grid tie-in is feasible, and in regard to local development.

- Hydro Energy

There was unanimous agreement that the remaining potential for hydro power is very limited in Nova Scotia. Those few sites that are available have

considerably less than 10 MW available individually; furthermore, the most promising of the few remaining sites would directly conflict with environmental concerns, such as disrupting salmon rivers.

Intermediate Fuels

- Alcohols: Methane & Hydrogen

Although in some regions outside of Nova Scotia these fuels are viable energy sources, the group as a whole felt that due to the lack of a reliable delivery infrastructure, that it is currently impractical to consider these for Nova Scotia.

- Biomass Energy

Wood energy was supported by the largest sub-group within this workshop, and some sincere and convincing support for wood as a viable energy source was evident. Among the arguments presented were the concurrent control of underutilized scrub forests and the absence of $SO_2$ emissions. It was stated that the use of wood waste could generate greater socio/economic benefits than any other form of alternative energy. Suggestions were made that much of the potential of biomass fuel is wasted due to provincial policies and indifference toward its use. Some members questioned the continuity of supply and the inconvenience of control relative to oil and electrical power.

Groundwater Heating (Geothermal)

It was agreed that in Nova Scotia, the term "geothermal" is somewhat of a misnomer, and a more accurate description is that of groundwater reclamation in combination with heat pumps. This method could be used over some relatively broad provincial regions. Currently, in one location the use of a deep abandoned mine, filled with naturally heated groundwater, has proven to be successful. The group's consensus was that the investigation and use of groundwater heat reclamation has a significant heating potential that is presently substantially underutilized.

Tidal Power

All agreed that Nova Scotia is in a unique position in relation to tidal power due to the geographic features of the Bay of Fundy. By the nature of the tidal intermittency, and geography, large size plants must generally be considered. It was further agreed that the development process for tidal power is complex, that interprovincial cooperation would be required and that export of power may be a necessary adjunct to tidal development. Additionally, problems including siltation, high cost of borrowing on capital funds for construction, fish mortality, and the possibility of coastal tidal disruption were expressed. Despite these problems considerable sympathy was expressed with maintaining interest in tidal power for initiation beyond the next decade.

*2.2 Conventional, Non-Renewable Resources*

Coal

Since coal was the subject of a separate workshop, it was not considered here, except in the occasional contrast with alternate energy forms.

Oil & Gas

Similarly, oil and gas were the subjects of a separate workshop, but it was noted that oil (or gasoline) was the criterion upon which all other forms of energy are compared, in terms of convenience, energy density, versatility and economics.

Nuclear Fission

Somewhat surprisingly, a majority of the group was favourable toward nuclear fission power generation. A number of participants argued that nuclear fission should be reconsidered as a potential alternative energy source, and that the Canadian

designed reactor systems were more environmentally friendly than coal and oil sources. However, strong objections raised by a minority made it impossible to come to a general consensus on this issue.

The group did, however, agree that Mines and Energy should keep abreast of current technology and developments in the field.

Presently, the N.S. Power Corp. is prevented by legislation from constructing nuclear power plants. It was noted, however this does not prevent other organizations from engaging in such activity, an example being the Canadian designed "Slowpoke" reactor with an output capability of up to 10 MW.

The principal objections raised by those opposing nuclear power were the aspects of fuel storage and waste disposal, possible environmental dangers and the "not-in-my-back-yard" (NIMBY) syndrome.

Nuclear Fusion

The group concluded very quickly that nuclear fusion power generation is not and will not be a realistic option in the near future.

*2.3 Conservation & Cogeneration*

Considerable interest was expressed by the group in cogeneration applications. It was recognized, because of the dual nature of the energies involved, that long term planning by industry was essential if this set of energy sources is to be properly, or even adequately, used. The workshop concluded that cogeneration should be encouraged as a long term energy option.

## 3. Issues and Questions — The Mines & Energy Discussion Paper

**Issue 1: What are the real barriers to the increased penetration of alternative energy resources as energy supply options?**

The primary question is whether there is a reasonable payback for proven technology, generally a two to three year return on investment. The critical issue is not whether alternative energy technology will save money, but rather whether the financial return from it can compete with other forms of investment. Current government policies have few or no incentives to adopt alternative energies.

If we wish to promote alternative energy resources, something must be done either to shorten their payback period or decrease their cost. Economic uncertainty and basic survival are currently very important for some industries. The long time frame that is required to recoup an investment in alternative technology is not feasible for a company with a time horizon of three years. Supply and demand will dictate policy. However, end users do understand the barriers preventing greater penetration of alternative technology. Continued support of alternative resources can develop them to a point where a real market is created.

**Issue 2: How can alternative energy options be made more competitive with conventional energy supplies?**

- Cost-effectiveness, capital costs, reliability and convenience are strategic areas that need to be addressed.
- It is unrealistic to expect government to provide direct assistance, but tax incentives offer some possibilities for increasing alternative energy competitiveness.

The provision of low interest loans for implementing alternative technologies could also be examined.

- The use of indigenous resources should be emphasized in order to maximize associated socioeconomic benefits to the province.

**Issue 3: What are the environmental impacts or benefits of alternative energy technologies?**

What is society willing to pay to get rid of emissions? This relates to the ultimate costs of producing emissions and the problem of the external nature of environmental costs. This externality leads to the exclusion of environmental costs in most calculations; therefore, there is a need to internalize and take into account the eventual costs to society.

The greater awareness and concern of the public with regard to environmental issues could lead to greater acceptance of increased costs for energy products once previously external costs are internalized. In order to control emissions, legislation which provides a negative incentive will be required in order for industry and the public to recognize the benefits of curtailing emissions. Alternatively, only direct financial assistance to technologies which reduce emissions would have positive effects.

**Issue 4: What role does the demonstration of alternative technology and information transfer have in developing the use of alternative energy sources?**

Demonstration projects should be supported and financially assisted, but should avoid unnecessary duplication. Demonstrations should be used to exhibit current available technology, and the unique nature of each application should also be made clear.

**Issue 5: Should tax incentives be used to encourage the development, installation, and use of new technologies involving alternative energy sources?**

There were mixed feelings in the workshop group on the potential for tax incentives to provide advantages for environmentally friendly technology. If there are economic liabilities for industry to switch to alternative energy, tax incentives were felt to be required. Otherwise, there will be no voluntary movement by industry to switch unless the associated costs are reduced.

A discussion ensued of the allocation of the true costs of energy, and the development of a level playing field for all energy sources. An underlying theme was that if all energy sources were required by law to meet a set environmental quality level, then all forms of energy production would have to stand on their own merit.

## 4. Notes on Generalities

### *4.1 Information Dissemination*

A common thread that ran through all the discussions was the need for greater information dissemination, including the need for more extensive public education on the characteristics of alternative energy resources. It was evident that considerable information was available from Mines & Energy, Energy, Mines and Resources Canada, other government ministries and departments, as well as from universities through extension courses, etc.

### *4.2 Pay-back Periods*

The majority of the participants in this workshop were quite adamant that the payback period for alternate energy options to be considered industrially be limited to three years only, with four years as a maximum. For domestic use this period could possibly be extended to five or six years. Only

government-funded projects should be considered to or beyond ten years.

A minority group did not agree, feeling that alternative energy resources, especially renewable forms, should be considered viable with longer pay-back periods.

*4.3 Attitudes toward Research, Design and Development*

In relation to research, design and development (RD&D), the majority of this workshop group expressed conservative opinions rather strongly, to the effect that RD&D should not be part of the alternative energy picture in Nova Scotia.

A much smaller minority just as strongly disagreed with this philosophy.

*4.4 Real Costs of Energy*

The singular point of virtually universal agreement in the entire discussions was to the effect that where comparative energy costs of any type are considered, then **the true and full costs must be determined** if any realistic conclusions are to be drawn.

*4.5 Environmental Concerns*

Although environmental concerns for all forms of energy systems were considered, it was clear that economic aspects of energy utilization was the primary concern expressed by the majority of the workshop participants.

**5. Priorities for Development of Alternate Energy Forms**

Several points were identified as priorities that should be considered in the development of alternative energy resources for Nova Scotia. They are as follows:

5.1 Policies should be developed that allow the compilation of true financial costs of all current and potential energy resources in Nova Scotia.

5.2 These true financial costs should and must include the costs of meeting all environmental standards involved.

5.3 The promotion of conservation should be a priority in order to reduce the overall energy demand.

5.4 Greater use should be made of currently underutilized biomass and wood waste, as indigenous energy resources.

5.5 Continued long term consideration of tidal power should be included as a potential alternative energy source.

5.6 The Department of Mines and Energy should keep abreast of the development in nuclear technology for possible adoption in the long term if concerns about safety, environmental impacts, and waste disposal are successfully addressed.

5.7 Environmental concerns should be given very high priority, particularly in relation to tidal, nuclear, coal and oil energy forms.

5.8 There should be careful consideration of the use of selected tax incentives to promote the use of, or conversion to, alternative energy forms.

**Additional Comments from Participants**

*Nuclear power as a priority from the Alternative Energy Resources Workshop*

I personally have grave concerns about nuclear power, and I do not feel that placing it as a priority is an accurate reflection of group sentiment.

To clarify my views, I do not condone any change now in the present legislative constraint. However, I would go so far as to say the door should not be shut on keeping apprised of current

research and technology in the field. This, by the way, is the only consensus that I was aware of at the group level.

If the future provides some solution to my apprehensions about nuclear power, such as environmentally safe disposal of its waste, removal of the risk of large scale accidents, and the removal of public fear of nuclear proliferation, then and only then should further steps be taken to encourage this alternative.

There was no more than 10 — 15 minutes total comment on nuclear power, and it was my opinion that the group's scanty coverage of the issue would not lead to any statement about it as a priority issue. Emphasis would be more accurately placed on other energy alternatives: i.e., biomass, tidal, passive solar, geo-thermal, natural gas, municipal waste and co-generation.

Kathryn Heckman, M.U.R.P.
Conservation Strategy Subcommittee,
Nova Scotia Roundtable on
Environment and Economy

*Comments from the Facilitator*

(If a facilitator may be permitted the luxury of specific input comments, I would like to offer the following)

When dealing with the nine forms of alternative to coal and oil, it is very difficult to achieve sufficient expertise and experience with only twenty or so participants, each of whom may have limited interest and/or extensive expertise in a few areas.

It is my contention that each area of alternative energy forms deserves consideration on its own. Substantial quantitative background information is necessary for adequate discussion and the drawing of valid conclusions. As well, the time element in this particular exercise was woefully inadequate to assure that all necessary aspects of each specific energy resource was considered.

Nuclear fission power should be positively reconsidered as a potential energy source for Nova Scotia in the near future. Although Canada generates only 15.6% of its electrical energy by nuclear means, the U.S., Sweden, U.K., West Germany, Japan, South Korea and Taiwan all generate substantially higher percentages than Canada, with France leading the active nations at 74.6%.

Canada leads the way in safe and reliable fission reactors and has he safest disposal site of all in the Canadian Shield region. Canadian designed reactor systems are more environmentally friendly than coal and oil sources. Although unanimity was not reached, it should be noted that a positive majority view on nuclear fission power generation was reached rather quickly (with the exception of a small but adamant minority).

I respectfully recommend that the process started here be continued, but on a much more complete basis in order to adequately explore the realities, the opportunities, the costs, the environmental concerns, the long-range consequences and the quality of life inherent in potentially adopting these variations of energy supply.

Charlie H. Miller, Ph.D., P.Eng.

## COAL

*Dr. Teresa MacNeil was facilitator of this workshop. She is currently Director of the Extension Department at St. Francis Xavier University and has worked as a professional adult educator with community groups, national voluntary organizations, government agencies and graduate students for thirty years. Dr. MacNeil served as Acting President of the Cape Breton Development Corporation in 1987-88, as DEVCO chairman from January 1986 to January 1989, and as a DEVCO Board member from 1972-1977. She also spent three years as Vice-Chairman of Enterprise Cape Breton.*

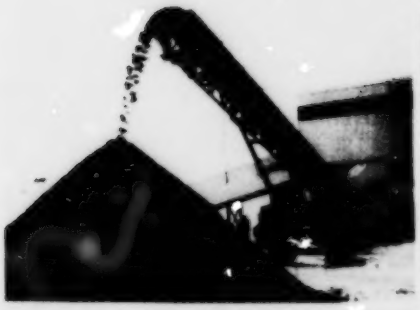
*Dr. MacNeil's work with DEVCO has made her very familiar with the issues and problems associated with coal extraction, treatment and marketing, as well as the policies and regulations affecting the industry.*

*Steve Parsons was recorder for this workshop.*

### Coal as a Fuel of Choice for Nova Scotia

There was consensus within the workshop that:

*"coal will continue to be the 'fuel of choice' for the generation of electricity, because we have it in Nova Scotia in secure amounts large enough to generate the required electricity. Other technologies should be kept in mind, particularly nuclear and tidal power as well as gas, in case they become viable for the Nova Scotia condition."*



In terms of generating electricity, coal is the largest energy supplier in Nova Scotia and is the least expensive resource to use for electricity compared to such alternatives as oil, wood, and nuclear power. Developing and utilizing local coal within the province positively affects the provincial economy. The workshop recognized the imperative of developing and using coal in a way that is compatible with a clean environment.

This view of coal as the 'fuel of choice' is a short term perspective, and as such was regarded by the group as inadequate. The group was unanimous in its view that five year plans do not permit sufficient room for creative change. A fifteen to twenty-five year horizon incorporates a much longer vision which allows for such change in terms of technological advancements of alternate energy sources as well as new coal technologies.

### Emission Control

A principal focus of the workshop was on emission control. There was agreement on the need to establish targets as a basis for achieving change. However, targets tend to be arbitrarily set. In the case of $CO_2$, there is a tendency for political opinion, rather than scientific evidence about climate change, to set the target and the timetable. To be effective, targets must be practical and achievable.

Specific attention was given to the federal government's recently proposed target for $CO_2$ emission levels for the year 2000 (i.e., stabilized at 1990 levels). Because of the uncertainty about how to achieve $CO_2$ emission reductions, it is impossible to guarantee the achievement of a target within a specified time line. Three suggestions were made for coping with this reality:

- to agree externally (i.e., with the federal government) to aim for a general goal, without a specific timetable, and in concert with the nature and timing of emission reduction measures taken by other nations;
- to closely examine internally (i.e., within the province) practical means

for achieving a specific target within a specific deadline;
- to rely on the scientific community to intensify efforts in emission control in conjunction with the existing political framework.

Only once such a strategy is adopted can a genuine commitment be made to achieve a target, and only then can the province know what price it will have to pay to realize the target.

The group emphasized the difficulty of coping with $CO_2$ emissions, which calls for dramatic shifts in lifestyles. There is no practical absorbent for $CO_2$. Lower $CO_2$ emissions must come from reducing the use and consumption of fossil fuels, either in specific sectors, and/or through improvements in combustion efficiency. Both strategies must be pursued in an attempt to stabilize emissions at 1990 levels.

The first, reduction in usage for specific purposes, can only be achieved by the consumer. Economies in usage of electricity may have to rely on increasing the price of energy. Economies in the use of transportation fuels would come from legislation, e.g., specifications governing the size of engines and pricing of gasoline.

The second, improvement in combustion efficiency, can be achieved by the electrical utilities and by automobile engine manufacturers. The competitive process might be a way to improve car engines along with increases in gasoline prices. Improvements by the utilities may have to be pressed for by enlightened boards of public utilities.

It must be recognized in the long run that a decrease in $CO_2$ is not compatible with an increase in population and with current *per capita* levels of fossil fuel consumption. Efforts to control emission should be guided by scientific knowledge of climate change. However, even in the absence of a proven link between emissions of $CO_2$ and other radiative gases to climate change, conservation and efficiency measures should be pursued because they make environmental and economic sense.

The workshop reviewed a wide range of viable approaches to $SO_2$ reduction. These are systems for which the basic research is complete and which are in the implementation stages. These include: circulating fluidized bed process, stack scrubbers, blending low and high sulphur coals, and improving burners. There was considerable discussion about the relative advantages and disadvantages of additional cleaning of raw coal to reduce its sulphur content. This was viewed as a way to deal with the problem of $SO_x$ emissions at the most fundamental level, although some concerns were raised about the process' cost-effectiveness.

It was generally agreed that the CFB process at the Point Aconi station is in fact capable of achieving required reductions. One member voiced a concern that new measures to reduce sulphur would indeed be successful, but there was a danger that they would mask old problems, in the sense that there remains a need for old plants to achieve sulphur reductions.

A general concern relating to emission control levels is the need for some kind of equivalency system to avoid the wasteful practice of having more than one system imposed to achieve the same general outcome. For example, there is a tendency for the federal level to extend a standard required for one part of the country and apply it to the entire country, even when the standard is unnecessary in some regions. The principal of equivalency would ensure that the standard being applied in Nova Scotia addresses the global obligations of the province. Once agreement is reached on the basis of equivalency, implementation of the regulations should be left with the province, in order to avoid the current, costly and awkward circumstance of following two regulatory systems (i.e., federal and provincial).

Transcending most of the discussion was a concern that no significant emission control can be realized without attention to conservation. Practices such as retrofitting existing plants and utilizing waste heat to improve overall efficiency are examples of energy conservation. It is necessary to study the opportunities, constraints, technologies and imoact of using energy that is now discarded during electricity generation.

Each aspect of the coal extraction and utilization process must be critically examined with a view to achieving the most efficient use of the resource. This attention to conservation must extend to the end-user to ensure that electricity is not wasted. The group acknowledged that public education should be in the forefront among measures for energy conservation.

On the question of who should pay the cost of emission control measures, it was agreed that while end-users do not want to pay directly, they might be willing to accept the idea as inevitable. Direct payment for such measures would encourage conservation practices. The alternative of imposing indirect charge through taxation hides the cost and reduces the pressure on individuals to conserve energy.

It was generally agreed that the Public Utilities Board should retain its power to deal with the supply and pricing aspects of electricity. One member emphasized the need for the general public to have improved access to the regulatory body, and suggested that an elected body (i.e., some aspect of government) should play the regulatory role. The group acknowledged the dilemma facing government and the PUB of needing to protect the consumer from undue cost, while at the same time requiring increased funding for emission control for environmental protection.

**Research**

Research priorities in the field of coal extraction and utilization were discussed in a global context as well as in terms of direct intervention on behalf of Nova Scotia. It was agreed that the primary focus of research should be directed towards three general areas:

- emission control including attention to removing sulphur and taking steps to reduce $CO_2$;
- safety and economics of coal extraction; this includes the need for critical attention to the unique features of submarine mining encompassing ventilation systems, methane outbursts and efficient transportation systems; and
- improving efficiency of power generation.

A distinction was made between research done by the province or under the sponsorship of the province and what is done for the Nova Scotia scene by a variety of researchers. However, it was agreed that what is of utmost importance is for the Department to be attentive to what is specifically required in Nova Scotia, e.g., the safety factor relating to methane outbursts.

The fundamental purpose of research is to use coal more efficiently, and with high regard for environmental protection. As we become more efficient we can look toward the sale, beyond Nova Scotia, of our coal technologies. A further responsibility of the Department is to have an up-to-date set of research priorities irrespective of how they will be financed and who will conduct them.

There was no general consensus on a system of funding coal research. However, it was agreed that all producers of coal and end users of electricity should share the costs of the research in an equitable manner. Several options for funding were discussed including:

- increase co-operative arrangements e.g., within province, federal-provincial, inter-state, public-private;

- direct charge to user/consumer as an identifiable item on the electricity bill (this was highly favoured for its educational and conservational potential);
- tapping into research projects at universities, thereby gaining access to additional expert and funding sources;
- provincial Resource Recovery Fund; and
- royalties on coal (the discussion related to increasing royalties from the current 28 cents per tonne; no conclusion was reached).

In response to the Department's proposal of establishing an Office of Clean Coal Technology, it was agreed that this would raise the profile of coal research. As well, the demonstration mode might serve to attract some private funding. Decisions about research priorities and funding for the Office should be the responsibility of various funding and user agencies.

**Policy**

The workshop reviewed current objectives outlined in the discussion document and found them acceptable. It emphasized the need to ensure that coal is sold in the cleanest possible form.

It was agreed that it is important to have coal become an environmentally friendly alternative. This can only serve to enhance economic security. The need to reduce possible harmful environmental consequences of coal production and utilization cannot be over-emphasized.

It was suggested that the province should only expand electrical generation capacity after taking maximum conservation, efficiency, and demand side management measures. Then expansion becomes the only practical option.

It was emphasized that efforts should be made to maximize the economic potential of alternative energy sources, such as wind and solar. Work should continue on ways to overcome problems associated with the development of tidal power e.g., energy storage, minimum economic size, environmental impacts. As well, the province should review its position on the use of nuclear generation in the long term.

It was agreed that we should be encouraging coal development in Nova Scotia beyond our own requirements. However, we should only welcome energy intensive industries on the condition that they are in fact (and not just promise to be) energy efficient. We have difficult emission standards to achieve and they must not be diverted by new industries.

There were mixed views with respect to the question supporting coal mining operations for economic and social reasons. There was general agreement for reasons of energy security Nova Scotia should be prepared to support coal mining operations even though they may not at present be financially viable. The thrust, however, is to strive for financial viability.

## ELECTRICITY/PRIVATE POWER

*Mr. Richard (Dick) DeLory was facilitator of this workshop. He is president of DeLory Consulting Services and has a Masters of Engineering (Civil) from the Technical University of Nova Scotia. Mr. DeLory worked with the Nova Scotia Power Corporation from 1959-1986, holding the positions of Director of Engineering, Manager of Design and Construction, Manager of Project Division, Manager of Engineering, and Head Civil Engineer.*

*Mr. DeLory also has a keen interest in private power generation and hydroelectricity, and was a Member of the Management Committee for the Bay of Fundy Tidal Power Review Board from 1975 to 1986. DeLory Consulting has provided planning and design advice to both small and large power producers, as well as hydro dam inspection and evaluation.*

*Jane Wrathall was recorder for this workshop.*

The group reached consensus that the issues suggested in the Discussion Document were the pertinent ones facing the power industry today, and that discussion of these would provide information helpful in determining an energy strategy for the future.

**Issue 1: How should the supply and prices of electricity be regulated in Nova Scotia?**

Faced with the issue of price and supply regulation of electricity in Nova Scotia, participants raised some pertinent points. It was the consensus of the group that this responsibility should be divided into three separate aspects; policy, supply (including the regulation of new facilities), and pricing. It was agreed that the provincial government has to be responsible for setting the broad directions of energy policy in Nova Scotia and implement these through legislation. Such legislation would define the roles of both the utility (and other producers) and the Public Utilities Board in the field of energy policy.

The approval of new facilities, and decisions about pricing and rate structures with regard to electricity should remain under the jurisdiction of the Public Utilities Board. Cabinet should not be able to overturn specific decisions. All appeals of decisions should be to the courts on points of law only. The only other avenue would be through the political process, to effect changes in governing legislation. However, such changes in legislation should be generic, and not focus on individual plants or applications.

The rate structures for electricity in Nova Scotia should remain the responsibility of the Public Utilities Board and the decisions made there should be based on what rates are a fair and equitable choice for Nova Scotian consumers. Social policy considerations (for example, the affordability of power by the poor or seniors) should be dealt with through government policy outside the rate structure.

There was a strong opinion expressed that changes need to be made in the *Public Utilities Act* which would allow more recourse for minority groups to intervene. It was suggested that it is the high costs and time factors which make Public Utilities Board interventions by these smaller groups (e.g., small power producers and citizen organizations) more difficult. The group suggested that perhaps the provincial government should make available to such groups a pool of funds with the intention of helping them gain legal access to the Board.

There was a strong suggestion and general agreement (save two dissenters) that changes were needed to the Amended Section 258 of the

*Public Utilities Act.* In essence it is this section of the *Public Utilities Act* which deals with Point Aconi, nuclear power generation, and the use of indigenous fuels for the production of energy. The suggestion here was by no means that the provincial government should plough ahead with nuclear power projects, but rather stressing that all options in the energy field remain viable alternatives for consideration at the appropriate time in the future. Options should not be eliminated by legislation — each should be evaluated on a set of fair, consistent criteria.

On the question of using rate structures as tools to influence public policy objectives in fields such as energy conservation and industrial development, it was the consensus that the social aspects of rate structuring should be undertaken by the appropriate government bodies (i.e., Environment, Mines and Energy, and Lands and Forests).

**Issue 2: What role should an electric utility play in the province's energy markets and economy?**

It was felt by the group that the Nova Scotia Power Corporation should not have an economic development mandate for the province but that this should be handled by the provincial government. It was also felt that the social costs associated with industrial development should be taken off the backs of the NSPC. Rates should reflect the true costs of producing power.

There was a feeling, at this time, that the Nova Scotia Power Corporation should not be in the business of developing dedicated facilities for the export of firm power to markets outside the province. Concern was expressed over the environmental impacts of export projects, as well as the use of non-renewable resources. On the other hand, the interconnection that Nova Scotia has with New Brunswick could be put to more use by efficient exchanges of power between these provinces.

**Issue 3: How should electricity be supplied in Nova Scotia?**

In general, the group believed that no option as far as the supply of base load (i.e., coal, natural gas, nuclear power, tidal power, wood, other independent generation, and import-based supplies) should be ignored. Two or three participants were firmly against the nuclear option.

No conclusion was reached on the other side of the question, that is, whether the utility should be a public or private industry. The group noted that they felt they did not have enough information on this topic, and that more information should be obtained, especially from the United Kingdom, which is in the process of privatizing its electric utility, the CEGB. It was felt that Mines and Energy should look into this privatization process and answer the warranted questions in this field.

There was a lengthy discussion on the rate structures for private power producers. The best we can say about this topic is a stalemate was reached. The private power producers in the group argued that the avoided costs, as agreed to by the Public Utilities Board, were not the real or true avoided costs. They argue that items such as:

- the fact that Nova Scotia Power Corporation does not pay taxes;
- the NSPC can borrow at a lower rate; and
- small power projects are more environmentally friendly.

should all be taken into account.

The majority of the group (those not in private power production) suggested that these producers, most of whom require more funds than those provided by the rates established in the Public Utilities Board decision, would have to go to other sources. Those would most likely be other government departments, namely

those who would benefit from the socioeconomic aspects; e.g., Lands and Forests, Environment, etc.

**Issue 4: What role should demand side management (DSM)/energy efficiency play in Nova Scotia's electricity markets?**

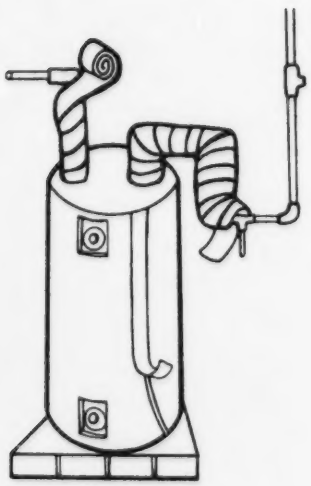
On the DSM topic a great number of issues were discussed throughout the workshop. It was felt that DSM would best be divided in two categories, those being; (a) energy conservation and efficiency, and (b), re-timing energy use.

It was thought that the public would accept the use of DSM programs, especially if free, or if offering a short time payback. The public, in general, has a short term outlook on payback time, only taking DSM seriously if the actual payback is quick. In essence, people will participate in DSM programs if it is in their economic best interest to do so. One problem is the availability of capital, even when paybacks are short.

There was a suggestion that perhaps to overcome consumer unwillingness to pursue DSM, the Nova Scotia Power Corporation could be persuaded to supply the products needed to the consumer on a term payment program, to be paid in their regular power bill. It was also suggested that there was a general need for further public education concerning DSM.

In general, it was agreed that DSM is a good concept, but it can be confusing as to precisely what the benefits are. It was suggested that there are three levels to the DSM process which should further be examined:

- consumer benefits;
- utility benefits; and
- benefits to society.



## ENERGY EFFICIENCY AND CONSERVATION

*Professor Dimitri Procos was facilitator of this workshop. He is a professor of Architecture and Urban Planning at the Technical University of Nova Scotia and a long standing member of the Canadian Institute of Planners, the Solar Energy Society of Canada, the Community Planning Association of Canada, and the Royal Architectural Institute of Canada.*

*For many years, Prof. Procos has been heavily involved in studying and teaching domestic, municipal, and industrial energy efficiency. His books, papers, articles and presentations cover almost every conceivable aspect of the subject, from passive solar to the use of biomass wastes. Prof. Procos also has an extensive background in consulting and community work.*

*Sean Tipert was recorder for this workshop.*

The group decided at the outset that the benefits of conservation and energy efficiency are self-evident; there is no alternative if resources are to be used wisely and environmental concerns addressed. The group believed that Nova Scotia should lead the way in the implementation of energy efficiency technologies because of our heavy reliance on imported oil and our dependence on indigenous fossil fuels, which produce harmful emissions. However, Nova Scotia presently lags behind several provinces in the field of conservation and energy efficiency. It was generally decided that the technologies are available in Nova Scotia, but lifestyles, attitudes, information availability, relatively low energy prices and education hinder their potential use.

Education and information were viewed as the most influential tools for

the government to utilize to convince people of the benefits of energy efficiency. The government should provide information on energy efficiency to the public, businesses, institutions, and industries and act as a networker to connect groups with a vested interest in conservation and energy efficiency technologies. Some suggested that energy efficiency and conservation should be a greater part of the curriculum in schools.

The need to educate or train contractors, owners, building inspection personnel and occupants of the potential savings and environmental benefits of energy-efficient building design and operation was stressed.

Although only discussed briefly, the group agreed with certain participants that the benefits of recycling are immense and that recycling efforts should be stepped up. One member of the group thought an increase in the charge for the disposal of waste materials could be used as a mechanism to encourage recycling. As well, education should be a major mechanism for promoting further recycling and ensuring that people continue to do their part.

The group stressed that large grants and direct financial incentives were not part of the solution and tend to be a waste of the taxpayer's money. Nonetheless, later in the discussions, some participants suggested that direct incentives could be used if the money was provided as a loan and its use carefully monitored.

No one solution or mechanism was seen to be the answer to adopting energy-efficient technology. Instead, as one participant stated, "The big fix is a bunch of little fixes".

To establish more concise recommendations the workshop participants decided to define the most important recommendations according to the sectors of residential, commercial/ institutional, transportation, and industrial.

**Residential**

The establishment of building performance standards or norms; the need to retrofit older structures; education; government's lead in building energy-efficient structures; power rates reflecting the true cost of the energy consumed; acknowledgement and promotion of qualified and competent builders; and legislation to enforce energy efficiency standards for appliances and buildings were determined to be the most important factors within the residential sector.

1 Education through schools and other mediums should be increased to further promote the construction of the most efficient homes possible and to encourage the renovation of older homes to make them energy efficient.
2 Low-income houses should be constructed to be more energy efficient. The provincial government should work with the non-profit housing development sector and CMHC to ensure that the construction of non-profit, government supported housing plays a lead role in demonstrating maximum energy efficiency.
3 Nova Scotia should adopt its own energy efficiency building code to enforce the construction of more efficient residential structures.
4 The building code should be changed, so to be more user-friendly (easier to read and understand).
5 Incentives could be provided to encourage people to utilize the energy efficiency technologies that are available.
6 The use of inefficient technologies and their costs in relation to the degradation of the environment should be factored into the price the consumer pays for energy.
7 The display of standard guidelines for energy consumption should be mandatory for appliances, furnaces and buildings.
8 The cost of electricity should reflect the efficiency of consumption. For

example, a household that is consuming more electricity than a standard consumption rating for the building and number of people residing there suggests, should pay a higher price for that electricity, than a similar household consuming less than the standard.

9 Regulations should enforce that a potential buyer of a building be presented with the lifetime performance standards of that building.

10 Energy prices should reflect market prices and should not be subsidized, to provide people with a strong incentive to use energy more conservatively and to adopt more energy-efficient technologies.

11 People should be educated in building design technology and operating costs, so they will want to and be able to build a more efficient home, or so they will be more capable of asking questions about the operating costs of a house they may be interested in purchasing.

12 Those involved in the sale of energy or energy consuming products could provide zero percent or low rate loans to promote the sale of their energy-efficient products. In the case of the Nova Scotia Power Corporation such a policy would help them lower emissions and reduce the need for the construction of new production facilities, which would save money.

13 The site planning for new housing developments should encourage the better orientation of homes to maximize solar energy input and reduce the destruction that occurs on the site.

14 Renovation and retrofit should be encouraged through education, and possibly through mandatory efficiency standards which would have to be met within a certain time frame in older homes.

**Commercial/Institutional**

The establishment of building performance standards or norms; the need to retrofit older structures; education; government's lead in building energy-efficient structures; building life-cycle cost analysis; least-cost planning; and regular publications by Mines and Energy (and other government agencies) were determined to be the more important factors in the commercial and institutional sector.

1 The education of owners and occupants about the advantages of an energy-efficient building, and for everyone to utilize energy in a more efficient manner should be placed high on the list of priorities. As well, the education of contractors, architects, engineers and interior designers should be upgraded to ensure that they are more aware of efficiency technologies and the benefits to the owner, occupant and user of incorporating these within the design.

2 The energy efficiency code for these buildings should be upgraded.

3 The building performance standards should have to be met before a building permit is issued, or electrical hookup occurs.

4 The provincial government should demonstrate leadership by constructing energy-efficient buildings and utilizing life cycle cost analysis.

5 Qualified people should ensure that the structure meets building performance standards on a regular basis. Older buildings should be renovated to meet these standards within a certain lag time.

6 NS products that are efficient and competitive should be promoted. Some members of the group did not believe that Nova Scotia products should receive any type of special treatment and should have to compete equally with the products and services of the world.

7 Publications containing information on all aspects of energy efficiency

and conservation (tips on how to use energy very efficiently to the latest energy efficiency technologies could be included in the publication) should be produced by Mines and Energy. Articles from other publications could be used in the Mines and Energy publication or the Department of Mines and Energy could contribute articles to existing publications.

8 Energy service/product companies that provide energy efficiency technologies should be promoted by providing a list of such companies and services which is easily accessible to the public.

9 The awarding of contracts should be significantly influenced by the energy performance standards a contractor is going to incorporate into the structure.

10 The price the consumer pays for energy should reflect the efficiency with which that energy is used. A commercial or institutional building that is consuming energy above its energy standard consumption rating would pay a greater price for that energy than a building consuming energy below its energy standard consumption rating.

11 The inefficient heating, ventilation and cooling systems found in older buildings should be retrofitted. The use of incentives or energy efficiency standards that would have to be met within a certain time frame could promote this. The energy efficiency standards could also ensure that the most efficient lighting available is used.

12 Surplus energy sources, such as waste heat from electrical generating stations should be utilized.

14 Garbage should be used as an alternate energy source.

**Transportation**

A fuel tax to be used to support mass transit; zero tolerance to enforce speed limits; emission control check in motor vehicle inspections; advertising fuel economy ratings at the time of sale of a vehicle; equalizing the taxation on the different fuels available to reflect the efficiency and environmental impacts of each; construction of transit collector systems ("park and ride" system in which commuter parking and mass transit into the city is provided); and highway planning with energy consumption in mind were seen as the more important suggestions.

1 The use of rail, instead of trucks, to transport most goods over long distances should be encouraged.

2 The sale of vehicles should be promoted according to their energy efficiency. This could possibly be done through taxes that encourage the purchase of a more energy-efficient vehicle.

3 Bus routes should be changed so that more stops are provided, thus making transit more convenient to use.

4 There should be more electronic communication, such as facsimile machines to reduce transportation needs.

5 Reduction and compaction of product packaging should be promoted so that more products can be carried per shipment.

6 People should be encouraged to car pool.

7 The speed limit should be enforced using a zero tolerance policy. The maximum speed limit on highways would be the upper limit, with no exceptions and any person driving above that speed would be subject to fines. This would provide people with a strong incentive to drive at a speed which uses fuel more efficiently.

8 Collector systems for 'out of town' commuters should be established. Parking facilities should be provided at the urban fringe of the city and an efficient mass transit system provided to get people into the core employment areas of the city.

9 A tax should be placed on fuel to assist in the funding of public transit and to encourage people to use public transit.

10 Bridge fares and parking fees should be increased to better reflect the true costs and problems associated with personal vehicle-single person transport. This would also encourage the use of public transport and reduce traffic problems, wasteful energy consumption, and pollution.
11 More efficient fuels should be developed and promoted.
12 Traffic signalling should be synchronized (computerized to reduce traffic delay).
13 Drive throughs at restaurants, etc. should be restricted to reduce gas consumption.
14 Highway construction should be planned to consider energy consumption. An example of this would be the construction of highways over the shortest distance possible.

### Industrial

The energy efficiency of industries and locating them in close proximity according to their processes were the main concerns. Mines and Energy should take the lead in informing the public and managers about technical and organizational initiatives elsewhere.

1 Three phase power could be established on the eastern shore of Nova Scotia, but the capital expense of doing this may be too high.
2 Regulations should be established for industries to meet a certain standard of efficiency within a specific time period.
3 Industries with similar processes (energy consumption patterns) should be located in close proximity to one another instead of by sector.
4 Publications, targetted to industry, promoting energy efficiency should be produced by Mines and Energy. The benefits and problems of new energy efficiency technologies might be one of the subjects covered in the publication.

**Miners' union digging in for long Devco fight**

## ENERGY, ENVIRONMENT AND ECONOMY LINKAGES

*Ms. Susan Holtz was the facilitator of this workshop. She is Nova Scotia's acknowledged expert in this field. Ms. Holtz is currently Vice Chair of the Nova Scotia Roundtable on Environment and Economy, a Member of the Executive Committee of the National Roundtable on Environment and Economy, and a member of the Canadian Environmental Assessment Research Council, the Canadian State of the Environment Public Advisory Committee and the National Task Force on Environment and Economy, as well as a number of other groups and consultative bodies.*

*Ms. Holtz has carried out extensive research and private consulting on energy, the economy and the environment as a linked unit, in addition to holding the position of Senior Researcher and Energy Specialist for the Ecology Action Centre for many years.*

*Gary Muller was the recorder for this workshop.*

The approach in this workshop was to explore and record both agreement and disagreement, rather than to try to come to a unanimous recommendation in answering the assigned questions. More precisely, the discussion goals were (1) to identify any areas of broad consensus and (2) to describe where participants' positions clearly diverged. The general structure of the discussion was based on the five issues assigned to the workshop in the background document. The five issues, written in question form, were:

**Issue 1: How can we carry out economic development, which involves energy as a commodity either consumed or produced, in a manner which enables us to maintain the desired degree of environmental quality?**

**Issue 2: How should government and society in general achieve its environmental objectives while at the same time allowing industry to maintain its economic viability?**

**Issue 3: What criteria should be used when targeting an energy mix for the Province?**

**Issue 4: Should energy projects be used as an economic development tool if the project is financially unattractive but generates economic benefits to the province?**

**Issue 5: Should the province pursue an energy export policy as a means of stimulating economic development?**

### Four Main Discussion Topics

Rather than trying to address, separately and in chronological order, all 15 of the specific questions listed under the five issues in the discussion document, the workshop focused on four main topic areas which emerged during the discussion. Insofar as this was a deliberate discussion strategy, it was a way of using limited time to explore the questions the group found most interesting and productive. It was also an attempt to consolidate related topics so that they could be pursued in greater depth.

These four particular discussion topics represented a means of approaching some of the most important questions, information, or assumptions which seemed to lie behind the five issue questions listed above. In a sense, these four topics are a sharpened version of the five issues. The four main discussion topics were:

- the province's social and economic goals and objectives;
- the province's environmental goals and objectives;
- the combined social, economic and environmental criteria by which to review Nova Scotia energy policy;
- the conditions under which Nova Scotia should permit or pursue energy export projects.

### 1 Social and Economic Goals

In discussing questions related to the linkage of economic development and energy policy (Issues 1 and 4, above), a prior question arose: what should be the goals for economic development in our province? Several participants raised questions about the meaning of "development", and noted that it was more appropriate explicitly to include social and cultural needs and aspirations along with economic aspects when using this term. "Sustainable development" is often defined as meeting human needs in ways that don't diminish meeting future generation's needs; the implication is that development policy must start by asking whether basic human needs are, in fact, being met.

#### *1 Discussion Results*

#### Social Issues

- Social concerns must be kept in mind in energy policy. Are the energy needs of the poor affordable? Are these needs being met? In particular, allowing or encouraging energy prices to rise — which is desirable in order to reflect real environmental costs and to encourage energy demand reduction — also will affect the ability of the poor to obtain basic energy services. There was

agreement that this issue must be addressed, but no consensus on the best way to do this.

Economic Goals

- "Full employment" and a greater degree of provincial economic self-sufficiency were identified as possible economic goals in addition to the traditional goal of increased *per capita* income. Greater economic equity and more innovation were also put forward as development goals. Some participants noted that in their view, full employment (i.e., less that 4% unemployment) was a more important goal than higher incomes or increased competitiveness. Others saw increasing economic growth as central to achieving some of the other social goals. "Stabilize resource use and increase *per capita* income" was another formulation.

In short, there were different shades of opinion on what the emphasis should be in economic and social development policy, but there was a general consensus that the single development goal of increasing economic growth was, by itself, inadequate for today's world.

Better Analytical Tools

- There was consensus that better analytical tools for incorporating the full costs of energy and displaying subsidies are urgently needed. More information about real environmental costs and economic subsidies has to be available to policy-makers and the public if policy is going to be both politically acceptable and also sustainable. Nova Scotia Mines and Energy should make more efforts to develop such analytical approaches and to increase the availability of the information to the general public.

*.2 Recommendation*

- There was a very strong consensus that the development of more efficient use of energy is a broad policy goal that addresses both economic and environmental objectives, and that this should be the central thrust of Nova Scotia's energy policy.

*.3 Additional Comments*

Most people believed that social policy, rather than energy policy, should be the main focus for addressing income and equity issues, although a few felt that a "lifeline" approach to basic energy services was a valid policy option.

In general, although there was a wide ranging discussion on economic development in its many aspects, there was little agreement on specific directions. One specific question which was debated at some length was whether highly energy-intensive industries should be discouraged from locating in Nova Scotia, as part of an energy efficiency policy thrust; no consensus was reached. However, there was agreement that energy costs for such industries (or any industries) should not be subsidized for reasons of economic development.

Some members noted that, by positioning the province to develop more energy-efficient and environmentally sensitive products and services, this could be a time of opportunity.

## 2 Environmental Goals

In reviewing Issue 2, which concerns how society's environmental goals can be achieved without damaging industry's economic viability, the prior question of what exactly are the province's environmental goals was considered. It was noted that, without explicit environmental goals, the original question is unanswerable.

### .1 *Discussion Results*

General vs. Specific

Some members thought that broad goal statements are politically useful and are all that could be achieved in a general forum such as this one. Others believed it was useful to articulate as many explicit environmental objectives as possible in the workshop, as a starting point for further detailed policy development.

Specific Objectives

Some specific objectives that were identified, but not universally accepted, include:

- a 20% reduction in $CO_2$ emissions by 2005;
- stabilized $CO_2$ emissions at 1990 levels by 2000;
- the mandated reduction in $SO_2$ and $NO_x$ emissions according to the federal-provincial acid rain agreement;
- reduction in the rate of wet sulfate deposition to a rate determined not to increase acidification;
- adherence to all international environmental standards and agreements (e.g., the Montréal Protocol on ozone-depleting chemicals).

General Goals

There was general consensus on the need for energy demand reduction as a specific environmental policy goal, and sustainable development as an overriding goal for the province.

There were varying degrees of commitment to the province's playing a leadership role in sustainable development nationally and globally. Most group members said that in terms of political will, Nova Scotia should commit itself to this goal. Others noted the limitations on this role if it were defined on the basis of technological innovation alone, since Nova Scotia's small size would seem to require a highly selective approach in this field.

### .2 *Additional Comments*

The group noted how few specific environmental quality goals have been identified in public policy discussions. Everyone is in favour of cleaning up the environment but few targets have been agreed upon. This was seen as a serious impediment to developing a truly integrative approach to policies linking energy, environment and development.

One of the areas identified in discussion as needing attention in this context is land use planning. Without explicit, province-wide environmental goals for such things as habitat protection, wetlands preservation, and maintenance of agricultural land, facility siting decisions will be made in a policy vacuum. Similarly, energy efficiency in transportation will be limited to improvements in vehicle fuel use, unless the goal of a more efficient transportation system is incorporated in land use planning and urban design. Nova Scotia Mines and Energy could play a role in promoting the need for such planning.

## 3 Energy Policy Criteria

This discussion was in response to Issue 3, above, criteria for a provincial energy mix.

### .1 *Discussion Results*

The group brainstormed a list of criteria for developing an energy mix for the province, which could be applied to technologies individually or the energy mix as a whole. The list included the following:

a Economic criteria, including

- least cost;
- affordability;
- job creation;
- revenue generation;
- other economic benefits.

b Environmental criteria, including

- vetos for specific environmental reasons, such as for specific hydro dam sites or for nuclear technology generally;
- least environmental impact as compared to alternatives.

c Demand reduction, including improvements through

- technical efficiency;
- end use efficiency;
- system change;
- activity reduction.

d Security/availability of supply

e Flexibility

f Convenience

g Reliability

h Renewability

i Indigenous sources

Each member of the group then identified what their top priorities and lowest priorities were. A majority agreed on energy and environment at the top, and convenience, indigenous sources and renewability at the bottom. Some emphasized that flexibility is the only way to provide security in a changing world, and put that as their first priority.

A few preferred demand reduction as their top priority since it implies a value shift toward a conserver society; others saw demand reduction as the main way to implement environmental goals, though not the only aspect of that criterion. Several people commented that in their view environment and economy should not be ranked separately but should always be considered of equal significance. There was some discussion about whether criteria should be used to evaluate individual technologies, or the supply/demand system as a whole; the group eventually decided that for practical purposes, the same criteria could be used in both contexts.

*.2 Additional Comments*

The group discussed whether the environmental and other benefits of natural gas justified Nova Scotia's pursuing this option beyond what was economically justified. Opinions about this were mixed.

Another discussion concerned centralization versus decentralization of society's infrastructure and services. Some noted that the trend over the past several decades toward centralization, which has resulted in efficiency increases and a well developed infrastructure should perhaps be now questioned. On the basis of environmental concerns and other criteria, such as economic benefits and security and flexibility, new decentralized energy systems may be desirable, even if they are not now least-cost alternatives. In other words, the existing centralized infrastructure may bias what is economic today in ways that reflect past realities rather than future realities.

## 4 Export Policy

In responding to Issue 5, above, concerning energy exports, the specific question addressed was: "Under what circumstances, if any, should Nova Scotia be using its indigenous energy resources to supply export markets?"

*.1 Discussion Results*

- A few favoured no developments for export markets; these participants believed that all real costs, especially environmental costs, would probably not be analyzed, and that a "no developments for exports" was the prudent policy.
- Most preferred to treat these projects on the same basis as domestic sources. If export projects meet stringent economic and environmental criteria, they should be permitted. Some noted that they should only be permitted if they met

these criteria and in addition maximize the value added for Nova Scotia.

- Some noted an opportunity to promote global sustainable development with technology export, especially to the developing world.

### 5 Specific Comments from Two Participants

We were pleased to have had the opportunity to participate in the Roundtable process, and would gladly participate again, but it proved exceedingly frustrating as well.

It is our belief that we are in the early stages of a crucial transition period in energy strategy throughout the world. The decisions we make now will determine how well we are able to survive economically in the emerging new reality as well as how responsibly we fulfill our obligations as citizens of this planet.

It is our firm conviction that the most prudent and advantageous course of action at this stage is two fold:

1. *We must aggressively pursue energy demand reduction strategies as the primary focus for our provincial energy policy for the next ten years.*

This means this is where our investment should go; this is where our institutional initiatives should be directed; and this is how we should aim to meet all of our anticipated increases in energy demand. We should set specific, clear goals for energy demand reduction in each energy sector. The goal should be to keep energy demand at the 1990 level or lower, in each sector, by the year 2000. We should state and promote these goals publicly and mobilize Nova Scotia commerce and the population at large to achieve these goals.

One specific tool which could be used to achieve these goals would be to establish a Conservation Tax for each type of energy consumed. The revenue earned by the tax should be used for the sole purpose of subsidizing demand reduction measures. Subsidies could be larger for lower income members of society – to assist those least able to adapt to this new policy.

2. *We should concentrate our research and technical applications in the energy field on new and emerging technologies for both renewable energy alternatives and demand reduction technologies.*

We do not have to plunge headlong into expensive basic research and developmental work. But if we develop a proficient level of expertise in emerging technologies, we can be primed to jump quickly on those which prove out in the next 5 to 20 years. This would emulate the Japanese example of using ideas developed elsewhere quickly and efficiently, to commercial advantage. This is the path of greatest promise and strength for our economic well-being, especially in the era of Free Trade.

Demand Reduction buys us time until new technologies are developed both for further reductions and for safer alternatives. *If we prepare ourselves we can develop strong competitive economic activity based on these two strategies.*

3. *No More Large, Environmentally Instrusive Power Plants*

We have one further observation to make. We were appalled by the overriding sense of "business as usual" but perhaps a little cleaner, which seemed to dominate the discussions at the Roundtable. We believe this is out of step with the new realities we are facing in the real world – and quite out of step with the general public in Nova Scotia.

We were particularly shocked to hear three different workshops suggest nuclear power as a serious alternative to be looked at, as well as Fundy Tidal Power. We feel the Nova Scotia

Government deserves credit for its position against nuclear power and should be congratulated for taking this position. Fundy Tidal Power, Point Aconi, and the Bluenose project are simply too large and expensive and environmentally intrusive to be worth pursuing in our view.

It is our hope that these comments can become part of the record of the Roundtable.

Brian Gifford
Co-operative Housing Federation of Nova Scotia
Cliff White
Community Planning Association of Canada/Nova Scotia

## OIL AND GAS

*Mr. Calvin (Cal) Ross was facilitator of this workshop. He is a principal of Valley Environmental Services and has more than 15 years' experience in the oil and gas industry, providing advice to both industry and government. Most recently, he has prepared the Environmental Assessmen: Section of the Cohasset/Panuke offshore oil development plan and participated in its presentation during public hearings.*

*As staff environmentalist for Mobil Oil for 8 years, Mr. Ross gained considerable knowledge and experience in preparing environmental impact assessments, public presentations, oil spills response, and planning and design of programs to monitor the effects of offshore oil operations in Atlantic Canada. He was also involved in inspection and supervision of oil developments throughout Canada. He has participated in numerous public consultations, conferences, and hearings.*

*Anne Traboulsee was the recorder for this workshop.*

The objective of the workshop was to try to reach consensus on issues related to the future of oil and gas and energy policy in Nova Scotia. We are all dependent on oil supply; the key issue is what oil and gas can do to provide energy for Nova Scotia in the most beneficial fashion. The group started with the seven issues outlined in the Discussion Paper and added an additional two.

### Agenda Items

The agenda items are outlined in the following report. The group started with nine issues and narrowed them down to six (two reached consensus and one was combined with a previous issue).

## Discussion of Issues

**Issue 1: Is the development of the offshore compatible with maintaining a healthy environment?**

There was was concern expressed about the fact that fossil fuels are a non-renewable source of energy; they also produce environmentally harmful by-products.

The group discussed whether or not it is possible to develop the offshore safely. In looking at risk, it is necessary to take into account what potential effects an accident would have on surrounding economic industries. If for instance, there was drilling on the Georges Bank, how would the drilling affect the fishing industry? What effect would a spill or blow-out have on the fishing industry, not only in the immediate area, but many miles away?

There was much discussion regarding Georges Bank; it was generally agreed that the Bank should not be developed unless as a last resort, and then only for reasons of national energy security.

The question was raised regarding oil spill and oil spill legislation — what standards would Nova Scotia want and how should they be defined? The following suggestion was made: In the interests of environmental protection and uniform standards the province should adopt the present *Canada Shipping Act* Pollution Prevention Regulations as a minimum for all offshore development and production.

It was also noted that there are areas that have suffered from oil spills and have returned to their original ecological balance much sooner than expected.

There was much discussion on whether or not stratigraphic tests should be done on the Georges Bank purely for scientific study. Although a moratorium exists on exploration activity, there are no legal restrictions preventing stratigraphic test drilling on Georges Bank outside the moratorium area. Some participants felt that government and industry should continue to assess the area so that an intelligent decision can be made when the present moratorium is reviewed in the year 2000. Studies should continue in order to make a decision on whether the moratorium should be extended.

There was some concern raised regarding environmental assessments, and how in the past some had not been effective or accurate. On the other hand, in some cases an assessment may not be biophysically required. The group recommended that drilling requests in provincially or jointly managed salt waters should meet the same requirements and standards as those in federally governed salt waters. Most of the Nova Scotia offshore is jointly managed with the exception of the Bay of Fundy, and certain other bays and basins.

**Issue 2: Should the provincial government advocate connection to the central Canadian natural gas distribution grid?**

The group discussed the costs associated with putting in a natural gas line versus the available market in the Maritimes. They also looked at alternative ways of using the gas once it was developed. Some of the ways include liquefaction of the natural gas at site, production of methanol, and site generation of electricity. Could Nova Scotia compete with the already existing infrastructure (i.e., Sable Gas vs Western Gas)?

If Nova Scotia were to tie into the Western Gas line in Quebec they could go through New Brunswick and service the market there and also service New England via the already existing gas line in Quebec and Ontario.

The effort at present should be to get Sable gas to shore, with some of it

being marketed to New England. The development of a pipeline in Nova Scotia would also open up a number of other smaller fields.

There was also some discussion with respect to drilling orders. There is a fear that resources are being sat on in significant discovery areas. The provincial and federal governments should set time limits with a provision for extension where required, stating that you cannot sit on development for unlimited time periods, although each case must be looked at separately. The feeling is that if there is more pressure to develop then more will happen. Should drilling orders be issued if someone has been sitting on a significant development area for several years? There was a strong opinion expressed that there should be legislation to this respect.

**Issue 3: Are current plans sufficient to ensure security of supply to the Atlantic Provinces?**

Nova Scotians do not feel adequately covered/protected if there were to be a petroleum shortage. There is legislation to handle emergency situations of supply shortage, but plans may or may not be adequate. Nova Scotia receives all of its crude oil from abroad, mainly South America and the United Kingdom. In the event of an emergency some of the Nova Scotian oil supply would have to come from western Canada. The main factor hampering this supply of crude oil would be the mode, cost, and time involved of transporting the oil.

The best way to ensure that Nova Scotia would have ample supply in times of emergency would be to have a strategic reserve in the Atlantic provinces that would service the region.

**Issue 4: Should the provincial government be involved in the regulation of petroleum product distribution and pricing (other than health and safety aspects)?**

This issue raised much discussion. On the one hand government involvement in regulation was felt to be necessary to prevent overdevelopment of retail gasoline facilities and oversaturation of the market, and to give consumers a better price and control price increases.

Regulations can protect the consumer because price increases must be approved, and oil companies have to justify the prices they are raising. However, this slow increase may also result in a slow decrease in price.

Is regulation the problem or is it the administration of the regulations? Are regulations excessive? There are many regulations and they cover many different areas; we need to look at the entire continuum of regulations and assess them.

On the other side, against regulations, high prices can result from the perception that new entrance to the market is barred and there is a lack of competition. This can hurt Nova Scotia consumers. Also, gas prices are not posted in Nova Scotia; this is unfair to consumers, who cannot make a decision until they are at the gas pump. To protect the consumer, gas prices should be posted.

We have regulation in Nova Scotia but this limits choices. We need more free enterprise and less government interference. No consensus was reached on this issue, but it was agreed that further examination of the regulatory structure was necessary.

**Issue 5: How should the costs and revenues associated with the Nova Scotia Government's involvement with the offshore be measured and allocated?**

One of the issues discussed in this item was whether or not transfer payments would be cut if the province

received increased royalties as a result of offshore gas development. It was felt that the net benefit to the province would not be equivalent to the transfer payments and in fact the province would lose out. We have to look at royalties versus industrial benefits.

There could be more technology transfer if outside development firms were encouraged to work with local firms (joint ventures). The transfer of technology would compensate for any loss in royalties if losses were to exist (the group did not feel that there would be any loss, however it would take approximately 8-10 years to see real profit).

Local professionals must be provided with the information and exposure to the new technology so that they can compete for new exploration and development concepts. Who should provide this information? Should there be a commitment by the Crown Corporation to attempt to obtain expertise from within the province or to align local firms with the technical firms to gain the experience and be part of the development.

One possible way to keep local professionals involved in development projects is to find a way to make information available earlier in the development process.

**Issue 6: Is there a need to improve the public's understanding of Nova Scotia's offshore and onshore oil and gas resources?**

There was general consensus that the public should be more informed regarding Nova Scotia's offshore and onshore oil and gas resources. They should not only look at the positive side but also at the possible negative implications. The question was raised: does the public want to be informed? At many of the local public hearings regarding exploration and development there has been little public input or participation, seemingly reflecting apathy.

People are disappointed about the way information is presented and the use of public hearings to measure public interest. There was a general belief that public awareness is going to change and that public interest goes up and down based on economics and location.

There seems to be little concern about the potential lack of supply of oil but more on how it is going to affect people's pocket books.

The public is becoming more involved in environmental issues, and it has been found by some industry leaders that if you wait for an issue to develop it is more difficult to have discussions with the public without arguments resulting. The public is more cooperative if they have early knowledge and involvement in development processes. You must to work hand in hand with the other stakeholders.

Dissemination of information should focus on informational education programs rather than position statements. We need to reform how information is disseminated. The public generally does not trust government, and therefore is not interested in reading or hearing its view. If the information were provided through the media in a positive form by an organization other than the government (but backed by the government) people would probably be more inclined to look at it. An example cited was that of the Greenpeace television ads and the positive response they have received from the public.

An important group to aim at is in the secondary schools. Our children should understand that oil and gas are non-renewable resources and that we should learn now how to preserve what we have. The idea is not to scare them but rather to inform them so that they can make intelligent decisions later on in life.

People want to know why prices continually go up when there is sufficient supply to last 100+ years.

How do you communicate to "Joe Q. Public" why he has to continually pay more money each time for gasoline, when this group of supposedly knowledgeable people don't know? There is a need for basic public information on the mechanisms that determine the price of crude and refined products. The government and oil companies/industry should not be the sole providers of this information, and the information has to be targeted at the age group to which it is being disseminated.

Consensus Issues

**Issue 1: Should provincial oil and gas resources be developed for export projects?**

Recommendation: THAT the provincial government should encourage oil and gas development for export if it is necessary for a project to be viable.

**Issue 2: Should there be promotion of onshore oil and gas exploration and development?**

Recommendation: THAT onshore exploration and development should be encouraged by the regular posting of lands and the increased involvement of Nova Scotia Resources Limited in onshore exploration and development.

**Recommendations for Agenda Issues**

**Issue 1: Is the development of the offshore compatible with maintaining a healthy environment?**

Recommendation: THAT the Province of Nova Scotia should, subject to existing environmental standards* and review procedures, on a project by project basis, encourage the exploration and development of offshore oil and gas in all areas. Georges Bank, however, should be protected until oil and gas production there is critical to national need and security. (Some participants felt that government and industry should continue the assessment required so that an intelligent decision can be made when the present moratorium is raised in the year 2000).

* Any drilling in the province proposed for provincially controlled salt water should be subject to an Environmental Assessment of the same quality as would be expected in federal jurisdiction.

**Issue 2: Should the provincial government advocate connection to the central Canadian natural gas distribution grid?**

Recommendation: THAT the Province of Nova Scotia should take the leadership in spearheading the development of Scotian Shelf gas. Transportation to market through Trans-Quebec and Maritime, or directly to New England through New Brunswick, should be investigated by the province. The province should also consider alternative development schemes.

**Issue 3: Are current plans sufficient to ensure security of supply to Atlantic Canada?**

Recommendation: THAT the Province of Nova Scotia should work with the federal government to implement the tactical petroleum reserve for Atlantic Canada, to be funded by a national surcharge on the consumption of specified petroleum products.

**Issue 4: Should the provincial government be involved in regulation of petroleum product distribution and pricing (other than health and safety aspects)?**

Recommendation: THAT the Province of Nova Scotia should consider holding public meetings to evaluate present regulations on the

distribution and pricing of petroleum products.

**Issue 5: How should the costs and revenues associated with the Nova Scotia government's involvement with the offshore be measured and allocated?**

Recommendation: THAT the Province of Nova Scotia should ensure early communication of opportunities for all proposed offshore oil and gas development projects.

**Issue 6: Is there a need to improve the public's understanding of Nova Scotia's offshore and onshore oil and gas resources?**

Recommendation: THAT the Province of Nova Scotia should provide information on the resource base of Nova Scotia, and this information should be targeted at junior level school audiences. The information should be presented in a positive tone on a cooperative basis by government, consumer groups, and industry. The purpose is to increase awareness of concerns and benefits.

**Additional Comments from a Participant**

There was specific discussion of the *Underground Storage Act* and Regulations in Nova Scotia by one of the participants. The points raised were considered too specific for the group to address within this workshop but the participant was asked to describe the basic points of his concern. These points raised by Mr. Alan Ruffman follow:

*Regarding the Underground Storage Act and Regulations in Nova Scotia.*

1. In mineral claim applications one is required to only pay $4.00 per claim per year (since 16 claims make up a tract, this is equivalent to $64 per tract), and to do $200 of claim work in the first year (the equivalent of $3,100 of work per tract). For a gas storage exploration permit, one pays $640 per tract, but one must only do $32 per tract per year of work on the permit, and even by year 5 only $160 of work per tract is required.
   In comparison to applicants for mineral claims, applicants for storage permits pay ten times as much at application but are only required to do one percent of the annual work. This high initial fee keeps out smaller parties with good ideas who may be looking for partners. The gas storage exploration permit fees should be changed to parallel those in the *Mineral Act*, but should also require a reasonable amount of work to be completed annually. When the gas storage exploration permit expires, all work completed should become public.
2. One can only apply for gas storage in areas that are a 'Declared Gas Storage Area'. On August 20, 1986, two areas of reasonable storage potential were undeclared – they are still undeclared! All of the province should be available for gas storage exploration permit applications. There is no need for a declaration process.
3. The *Act* allows granting of a gas storage exploration permit where a mineral license is in place, but does not allow you to then move to a gas storage license. Overlapping applications need attention.
4. If you make a cavern while holding a gas storage exploration permit, then if you drop the permit you are assured ownership of the cavern created in perpetuity with no requirement to pay an annual fee, or to continue to hold the acreage, or to do more work. This explains why DOW Chemicals of Canada Inc. at Port Richmond-Little River, Cape Breton, is paying no fee, yet no one else can pick up the acreage for gas storage and then do further work on the cavern. This regime contrasts sharply with the regime for an oil or gas well in Nova

Scotia. If you drill a well and then drop the acreage, it all reverts to the crown, including the plugged and abandoned well. You are not allowed to plug and suspend a well without continuing to pay annual fees, etc., and without doing more work on an annual basis.

5. The Nappan/Sifto cavern in Cumberland County is presently being created with no thought to future use for storage. The Nappan cavern should be assessed, monitored and required to be developed with storage and structural safety in mind if it has not gone too far already.

## 7 APPENDIX B – THE ROUNDTABLE CONSULTATION PROCESS

Since the last planning process was carried out in 1985 and the global energy situation has changed markedly, it is time to prepare a revised energy strategy. Public consultation is an important step in the development of a new energy strategy and in the spring of 1990 the NS Department of Mines and Energy decided to hold a fall Energy Strategy Roundtable. The Roundtable included representatives of the broad range of stakeholders in energy. This included industry, government, universities and the public.

Part of the preparation for the Roundtable included the identification of participants. The NS Department of Mines and Energy identified potential participants from contacts they had developed over the years. These people were knowledgeable about different aspects of energy production, consumption, distribution, regulation or environmental effects.

CEF Consultants were contracted to co-ordinate the Roundtable. One of the initial tasks was to review the potential participant list to ensure that those attending the Roundtable would represent a cross-section of the various stakeholders in a new energy strategy Care was taken to ensure that individuals from a wide range of non-government organizations that included representation from lower-income groups, the fishery, agriculture and housing organizations were invited.

All potential participants were sent an initial invitation late in September. These people were then called and asked if they would attend and which three of the six workshop topics available they preferred. If a representative

of a company or organization could not attend, they were asked to name an alternate participant. The participants of the Roundtable are identified in Appendix C at the end of this report.

Workshops had approximately twenty participants, with an upper limit of twenty-five, a workable size for discussion. In the end, all participants were placed in one of their three preferred choices of workshop topic; whenever possible people were given their first choice. Once people were assigned to a workshop, a background discussion paper and additional material related to the specific workshop topic were mailed to them. This material contained suggested questions to be addressed but participants were free to modify these questions or pose additional ones.

The Roundtable was chaired by Dr. Peter Adams, President of the Technical University of Nova Scotia. Dr. Adams was independent of both the consultants responsible for co-ordinating the Roundtable and the NS Department of Mines and Energy.

The Roundtable consisted of a morning plenary session, workshops on the topics of alternative energy resources, coal, electricity/private power, energy efficiency and conservation, energy, environment and economy linkages, and oil and gas, and a final plenary session where the results of discussions were summarized and questions and comments entertained from the floor.

The introductory plenary provided an overview of global, Canadian and Nova Scotia energy issues by speakers from outside of government who were familiar with the energy field. The workshops were facilitated by local people with backgrounds in the respective topics. While the workshop facilitators were chosen for their knowledge of the various workshop topics, they were instructed not to bias the discussions of the group in any particular direction. Recorders, who were independent of the facilitators, were responsible for objectively reporting the results of discussions.

A newsletter, reporting on the results of discussions of the first day, was distributed to everyone before discussions resumed on the morning of the second day. The newsletter was intended to let all participants know what had happened within the other groups, let them see what was being recorded so they could comment if they disagreed, and help focus discussions for the final day.

This report summarizes the results of the Roundtable. The report has been reviewed by all workshop facilitators, the independent Roundtable chair and members of the Roundtable Steering Committee (composed of members of the NS Department of Mines and Energy, other key provincial government departments, Voluntary Planning and the Nova Scotia Power Corporation) to ensure that it objectively reports on the discussions. CEF Consultants is responsible for the contents of the report and wishes to assure all participants that every attempt has been made to ensure that the discussions have been reported fairly and accurately.

## 8 APPENDIX C — WORKSHOP PARTICIPANTS LIST

Note: An asterisk by a participant's name indicates that they were able to attend only one day of the Roundtable.

**Alternative Energy Resources Workshop**

Mr. D. B. Baker
All-Energy Engineering Ltd.
Halifax, NS

Mr. George Baker
Hiltz & Seamone
Kentville, NS

Mr. Ronald Barkhouse
President, Tidal Power Corporation
Annapolis Royal, NS

Mr. David Barrett
President, Barrett Enterprises Co. Ltd.
Lower Sackville, NS

* Dr. Gordon Beanlands
School Of Resource and Environmental Studies, Dalhousie University
Halifax, NS

* Ms. Heather Dennis
Columnist, Halifax Herald Ltd.
Halifax, NS

Ms. Kathryn Heckman
NS Roundtable On Environment And Economy, Conservation Strategy Subcommittee
Dartmouth, NS

Mr. Mike King
President, Avon Valley Greenhouses
Falmouth, NS

Mr. Wayne Lewis
Board Of Directors, Offshore Trade Association of Nova Scotia
Halifax, NS

Mr. Bruce Lisle
President, Maple Leaf Technologies Ltd.
North Sydney, NS

Mr. Doug Maddison
Town Clerk, Town of Springhill
Springhill, NS

Mr. Ray Mills
Vice-President, Whitman Benn & Group
Halifax, NS

Dr. Bob Rudderham, P.Eng.
Member, Cape Breton Alternate Energy Society
Sydney, NS

* Dr. Maurice Tugwell
Professor, Acadia University
Wolfville, NS

Mr. Charles Williams
Executive Director, NS Land Owners and Forest Fibre Association
Port Hawkesbury, NS

Mr. Ross Young
Manager, Energy Systems Development, Nova Scotia Power Corporation
Halifax, NS

Mr. Allan Parker
Observer
(Manager, Energy Engineering, Nova Scotia Department Of Mines & Energy)
Halifax, NS

Coal Workshop

Mr. John Amirault
Jacques Whitford & Assoc.
Dartmouth, NS

Prof. Paul Amyotte
Chairman, Chemical Engineering Department, Technical University of Nova Scotia
Halifax, NS

Dr. Don Arsenault
University College of Cape Breton
Sydney, NS

Mr. Osmundo Betancourt
Director, Environmental Policy & Programs, Nova Scotia Power Corporation
Halifax, NS

* Mr. Kevin Cail
LaFarge Canada
Brookfield, NS

* Ms. Lois Corbett
Executive Director, Ecology Action Centre
Halifax, NS

Mr. Ray Holland
President, United Mine Workers of America
Glace Bay, NS

Mr. Stuart Hunter
Coal Association Of Canada
Calgary, Alberta

Mr. John Josza
DPA Group Inc.
Halifax, NS

Mr. Brian King
Neill & Gunter (NS Ltd.)
Dartmouth, NS

Mrs. Audrey Manzer
NS Roundtable On Environment And Economy, Conservation Strategy Subcommittee
Halifax, NS

Mr. Ron Nicholson
Vice-President of Engineering, Cape Breton Development Corporation
Sydney, NS

Ms. Shirley Nicholson
Executive Secretary, Environmental Control Council
Halifax, NS

* Mr. Gerald Phillips
President, Westray Coal
New Glasgow, NS

Dr. Phil Read
CANMET, Energy Mines and Resources Canada
Ottawa, Ontario

Mr. Joe Starzomski
Director, Research & Development, Nova Scotia Research Foundation
Dartmouth, NS

Dr. Sterling Whiteway
Consultant
Dartmouth, NS

Mr. Ed Bain
Observer
(Manager, Coal Development Section, Nova Scotia Department Of Mines & Energy)
Halifax, NS

Mr. Andrew Batcup
Observer
(Director, Energy Resources, Nova Scotia Department Of Mines & Energy)
Halifax, NS

**Electricity Private Power Workshop**

Ms. Jill Atkinson
Board Of Directors, Consumers' Association of Canada, NS Branch
Halifax, NS

Mr. Peter Bangay
President, Terra Marine Industries Ltd.
Halifax, NS

Mr. Richard Brown
Director, Systems Planning, Nova Scotia Power Corporation
Halifax, NS

Mr. David Browning
Extension Engineering, Department Of Agriculture
Truro, NS

Mr. Jack D'Orsay
Sydney Steel Corporation
Sydney, NS

Mr. William A. Digdon
President, Small Power Producers Association
Amherst, NS

Mr. Royce Hefler
President, Hefler Forest Products Ltd.
Lower Sackville, NS

Mr. Les Kirkpatrick
Past President, Nova Scotia Power Corporation
Halifax, NS

Mr. Doug Linzey
President, Nova Scotia Trails Federation
Halifax, NS

Mr. Bob Morrison
Assistant Deputy Minister, Energy Section, Energy, Mines, & Resources
Ottawa, Ontario

Mr. Dale Patterson
Chair, Environment Committee, Nova Scotia Federation of Labor
Halifax, NS

Mr. Charlie Pye
Chief Economist, Nova Scotia Department of Industry, Trade & Technology
Halifax, NS

Mr. John Wrin
Board Of Directors, Canadian Pensioners Concerned/Nova Scotia Division,
Halifax, NS

Mr. Peter Zwicker
Plant Engineer, Minas Basin Pulp & Power Co. Ltd.
Hantsport, NS

Mr. P. Carey Ryan
Observer
(Assistant Deputy Minister, Energy, Nova Scotia Department Of Mines & Energy)
Halifax, NS

Mr. Paul Taylor
Observer
(Senior Economist, Economics & Statistics Division, Nova Scotia Department Of Mines & Energy)
Halifax, NS

**Energy Efficiency and Conservation Workshop**

Mr. Fred Chalmers
Wilson Fuels
Truro, NS

Mr. Marshall Giles
Supervisor, Marine Facilities, Nova Scotia Department of Fisheries
Halifax, NS

Mr. William Gimby
Energy Consultant, Hometite Services
Armdale, NS

Mr. Al Hendry
Operations Manager, Purdy's Wharf Development Co. Ltd.
Halifax, NS

Mr. Neal Livingston
President, Black River Hydro
Mabou, NS

Mr. Dennis McCulloch
Sales Representative, Insul-Wall Co. Ltd.
Dartmouth, NS

Mr. Art Patey
Dartmouth Fuels, Ultramar Ltd.
Dartmouth, NS

Mr. Wensley Power
Cape Breton Regional Hospital Planning Office
Sydney, NS

Mr. Doug Rafuse
Engineering And Works, City of Halifax
Halifax, NS

Prof. Paul Reyno
Mount Saint Vincent University
Halifax, NS

Mr. Don Roscoe
President, Solar Nova Scotia
West Dover, NS

Mr. Brian Smith
Director Of Planning, Metropolitan Authority
Halifax, NS

Mr. Len Sweet
Vice-president, Customer Services, Nova Scotia Power Corporation
Halifax, NS

Mr. Tom Taylor
Chair, Energy Committee, Annapolis Valley Affiliated Boards of Trade
Wolfville, NS

Mr. Steve Tweedy
Enerplan Consultants (N.S.) Ltd.
Dartmouth, NS

Mr. John Vissers
Member, NS Roundtable On Environment And Economy, Conservation Strategy Subcommittee
Bridgewater, NS

Ms. Deborah Walker
Regional Manager, R-2000 Program
Dartmouth, NS

Mr. Jim Gordon
Observer
(Manager, Energy Programmes, Nova Scotia Department Of Mines & Energy)
Halifax, NS

Mr. Greg Haverstock
Observer
(Director, Energy Management Division, Nova Scotia Department Of Mines & Energy)
Halifax, NS

**Energy, Environment and Economy Linkages Workshop**

Mr. Dan Brown
Member, Voluntary Planning Board
Halifax, NS

Dr. Donald Curran
Nova Scotia Roundtable On Environment And Economy, Conservation Strategy Subcommittee
Halifax, NS

Mr. Brian Gifford
Co-operative Housing Federation of Nova Scotia
Halifax, NS

Mr. Terry MacDonald, Vice-president, Planning & Environment, Nova Scotia Power Corporation
Halifax, NS

Ms. Colleen Mercer-Clarke
Vaughan Engineering Associates Ltd.
Halifax, NS

Mr. Terry Nehiley
Executive Director, Halifax Regional Welfare Rights Assoc.
Halifax, NS

Mr. John Pearce
President, Transport 2000 Atlantic
Dartmouth, NS

Mr. Wynn Potter
Vice President, Atlantic Canada Opportunities Agency
Halifax, NS

Mr. Colin Stewart
NS Roundtable On Environment And Economy, Conservation Strategy Subcommittee
Dartmouth, NS

Mr. Bernie Swan
Officer, Transportation Policy, Nova Scotia Department of Transportation
Halifax, NS

Mr. Don Thomas
Economist, Promotions And Planning, Nova Scotia Department of Small Business Development
Halifax, NS

Mr. Peter Underwood
Director, Policy Planning Co-ordination, Nova Scotia Department of the Environment
Halifax, NS

Mr. Cliff White
Co-ordinator, Community Planning Association Of Canada/Nova Scotia
Halifax, NS

Ms. Nancy McInnis-Leek
Observer
(Planning & Development Officer, Economics & Statistics Division, Nova Scotia Department Of Mines & Energy)
Halifax, NS

Oil and Gas Workshop

Mr. John Bashynski
CBCL
Halifax, NS

Ms. Ishbel Butler
Clean Oceans Campaign, Maritime Fishermen's Union
Pictou, Nova Scotia

Dr. Ferial El-Hawary
Professor, Technical University of Nova Scotia
Halifax, NS

Mr. Bob Lee
Ship Safety Branch , Canadian Coast Guard
Dartmouth, NS

Mr. Jim MacDonald
Nova Scotia Resources Ltd.
Dartmouth, NS

Mr. Robert MacNamara
School Planning & Conveyance,
Halifax County School Board
Halifax, NS

Mr. Dale Mader
Executive Director, Retail Gasoline Dealers' Association
Dartmouth, NS

Ms. Loretta Mahoney
Canadian Oil Markets and Energy Planning, Energy, Mines & Resources Canada
Ottawa, Ontario

* Dr. Jim McNiven
Dean, Faculty Of Management,
Dalhousie University
Halifax, NS

* Mr. Norman Miller
LASMO Nova Scotia Ltd. Suite 1400,
Founder's Sq.
Halifax, NS

Mr. Bill Pictou
National Anti-Poverty Organization,
Nova Scotia Division
Truro, Nova Scotia

Prof. Maria Rockwell
Petroleum Engineering, Technical University of Nova Scotia
Halifax, NS

Mr. Alan Ruffman
Principal, Geomarine Associates Ltd.
Halifax, NS

Mr. Gary Sirota
Vice-President, P. Lane & Associates
Halifax, NS

Mr. Dick Stewart
Manager, Atlantic Herring Co-operative Limited
Yarmouth, NS

Mr. Fred Weir
Chairman & Chief Executive Officer,
Canada/Nova Scotia Offshore Petroleum Board
Halifax, NS

Mr. Melvin Whalen
Manager, Energy Resources Planning,
Nova Scotia Power Corporation
Halifax, NS

Ms. Vicki Harnish
Observer
(Director, Economics & Statistics Division, Nova Scotia Department Of Mines & Energy)
Halifax, NS

Ms. Sara Jane Snook
Observer
(Manager, Petroleum Resources, Nova Scotia Department Of Mines & Energy)
Halifax, NS

Nova Scotia
Energy Roundtable

## We want your comments

Did you attend the Nova Scotia Energy Strategy Roundtable? yes ❑ no ❑ workshop _____

Do you feel the Roundtable Report accurately reflected the overall discussions of November 5th and 6th?

- ❑ accurately represented all major issues
- ❑ represented most issues accurately except for _____
- ❑ represented all major points but established the wrong ranking of issues
- ❑ poorly represented some major issues including _____
- ❑ poorly represented most major issues

**Specific Comments** Please indicate the section and page number in the report when you are commenting on specific items.

Section ____ Page Number ____

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Section ____ Page Number ____

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Section ____ Page Number ____

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**General Comments**

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Name_____ Address _____ Organization _____